USSR Report

HUMAN RESOURCES

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USSR REPORT

Human Resources

Contents

LABOR

ECONOMIC EXPERIMENT INSTRUCTIONS ON WAGE FUND FORMATION

Moscow EKONOMICHESKAYA GAZETA in Russian Nos 3, 8 Jan, Feb 84

[Article: "Wage Funds: Instructions of the Gosbank of the USSR on the Procedure for Issuing Wage Funds to Production Associations (Enterprises) of Industry under the Conditions of the Economic Experiment"]

[No 3, Jan 84 p 15]

[Text] For production associations (enterprises) where, in accordance with the conditions of the economic experiment, the wage fund for industrial production personnel is determined on the basis of the magnitude of this fund in the base year and the sum of the wage fund's increase, calculated according to the accepted norm for each percent of increase in the output volume of production (normative net output (net production) or another index which more precisely reflects labor expenditures and the economy of material resources and, if necessary, commodity production or production output in physical terms), while for other groups of personnel a wage fund is established as an absolute sum, the wage fund assets are issued in sums whose limitations are calculated in the following manner:

a) For industrial production personnel, the limitations are regulated by the basic wage fund in the given quarter, augmented by the sum of this fund's increase, calculated according to the norm of the wage fund's increase, calculated according to the norm of the wage fund's increase for each percent of increase in the volume of production output.

Example: A production association established a basic wage fund for industrial production personnel in the given quarter in the amount of one million rubles. The norm of the wage fund's increase for each percent of increase in the volume of normative net production in the plan for the given year is established for the association at a rate of 0.3. The increase in the volume of normative net production for the financial quarter totals 4 percent.

In this case, the production association's wage assets for industrial production personnel may be issued to the limit of 1,012,000 rubles $(1,000,000 + \dfrac{1,000,000 \times 4 \times 0.3}{100})$.

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If there is a reduction in the volume of production output in the financial quarter as compared with the corresponding period of the previous year, the wage assets for industrial production personnel are issued within the limitations established for the basic wage fund in the given quarter.

b) For workers occupied in mastering new capacities, the limitations are established on the basis of the wage fund quarter.

c) For non-industrial personnel, the limitations are established on the basis of the wage fund quarter.

d) For non-staff workers, the limitations are established on the basis of the wage fund quarter.

Wage assets for the first 2.5 months of the quarter are issued in terms of the actual additional amount, but not over the general wage fund of the production association (enterprise) as a whole, the calculation of which is determined as the amount of the wage fund for industrial production personnel computed on the basis of the magnitude of the basic wage fund and the amount of increase in this fund according to the noimative increase of the wage fund for each percent of planned increase in the volume of production output, the wage fund for workers occupied in mastering new capacities, the wage fund for non-industrial personnel and non-staff workers, without the presentation of information on additional wages and those due, and taking into consideration the issuing of wage assets in the final calculation for the given quarter.

In the final calculation for the quarter, the wage assets are issued according to a report on additional and due wages, presented in the form of a supplement to the actual letter.

The information in this report is cited in the context of personnel groups (industrial production personnel, workers occupied in mastering new capacities, non-industrial personnel, non-staff workers).

Wage assets due for payment are determined in the report according to the total of the amount of wages actually added for industrial production personnel, workers occupied in mastering new capacities, non-industrial personnel and non-stafff workers, but not over the amount of wage fund assets to which the production association (enterprise) is limited for these personnel groups. In addition, savings in a wage fund received by the production association (enterprise) for one personnel group may be used to cover over-expenditure in another personnel group.

Relative savings or over-expenditure of wage funds by a production association (enterprise) as a whole is determined on the basis of the report as the difference between the amount actually added for industrial production personnel, workers occupied in mastering new capacities, non-industrial personnel and non-staff workers and the amount of wage fund assets to which the production association (enterprise) is limited for these personnel groups.

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Wage assets in the quarterly amount assumed for over-expenditure of the wage fund are issued to the production association (enterprise) in a prescribed manner.

Wage assets for industrial production personnel for the fourth quarter of the year are issued based upon the calculation of the actual rate of growth of productive labor as a whole for the year under review as compared with the average annual growth rate of productive labor for five years preceding the year under review and the actual growth in the volume of production as a whole for the year. In cases of reduction in the growth rate of productive labor for the year under review as compared with the average annual growth rate of productive labor for five years preceding the year under review, wage assets for industrial production personnel are issued on the basis of the basic wage fund prescribed for the year reduced by the amount of the fund calculated as the product of the normative increase of the wage fund for each percent of increase in the volume of production output by the percent of reduction in productive labor for the year under review (if the reduction in the growth rate of productive labor was provided for in the plan, then the calculation only takes into account the difference between the actual and planned growth rates of productive labor).

Example. In a production association the average annual growth rate of production labor for five years preceding the year under review constituted 104 percent; the planned growth rate of productive labor for the year under review was 103 percent; the actual growth rate of productive labor for the year under review was 102 percent and the growth in production volume for the year under review was 101 percent. The basic wage fund for the year was fixed at 4 million rubles. An additional 50,000 rubles was allocated to the year's wage fund for industrial production personnel. The normative increase of the wage fund for each percent of increase in the volume of normative net production in the plan for the given year was established as 0.3. The amount of wage assets due industrial production personnel for the 1st, 2nd and 3rd quarters, taking into account the supplemental allocation made in the prescribed manner to the wage fund for this personnel (according to the data of the reports on additional and due wages) constituted 3,070,000 rubles.

In this case, the wage assets of the production association for industrial production personnel in the 4th quarter may be issued in the limitations of 979,964 rubles

$$\left[\left(4,000,000 - \frac{(4,000,000 \times 1 \times 0.3)}{100}\right.\right.$$

$-3,988,000);$

$$\left(3,988,000 + \frac{(3,988,000 \times 1 \times 0.3)}{100}\right.$$

$-3,999,964);$
$(3,999,964 + 50,000 - 4,049,964);$
$(4,049,964 - 3,070,000 - 979,964)].$

3

With the reduction in the volume of production output as a whole for the year under review as compared with the preceding year, the extent of wage assets due as a whole for the year is determined on the basis of the basic wage fund calculated without its reduction in connection with the lowering of production volume.

If the additional wage amount for the 4th quarter exceeds the extent of wage assets due, calculated in the manner indicated, the amount of this excess is the over-expenditure of the wage fund and is issued in the prescribed manner.

For determining the extent of the wage assets due for the 4th quarter, the production associations (enterprises) submit an appropriate account whose content is cited in the supplement to the actual letter.

The ministries, in accordance with the rights afforded them under the conditions of implementation of the economic experiment, may use wage fund reserves in cases of a temporary worsening in the work indices of production associations (enterprises) for reasons over which they have no control, provided for by systematic indications regarding the normative formation of the wage fund, approved by the ministries with the agreement of the Gosplan of the USSR. In these cases, the production associations (enterprises) are issued a supplementary wage fund from the ministry's reserve, without changes in the norm for industrial production personnel, which is taken into account separately.

In the reports on added and due wages presented by the production associations (enterprises) to the institutions of the Gosbank of the USSR with the receipt of wage assets in the final account for the quarter as a supplementary allocation from the reserve, the wage fund is shown on a separate graph by the line "Industrial production personnel."

The production associations (enterprises), within ten days of receipt from the higher organization of planning indices, but not later than the period of receipt of wage assets for the first half of January, inform the staff of their institutions in the Gosbank of the USSR of the following indicators necessary for the implementation of control with regard to the issuing of wage assets:

The growth rate in the volume of production output for the year allocated in quarters according to the index of production volume accepted for the determination of the normative wage fund growth of industrial production personnel for each percent of growth in the production output volume;

The normative wage fund growth of industrial production personnel for each percent of growth in production output (normative net production (net production) or another index which more precisely reflects labor expenditures and the economy of material resources and, if necessary, commodity production or production output in physical terms) established in the plan for the given year;

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The goal for growth in labor productivity computed for one worker in industrial production personnel, established in the plan for the given year;

The average annual growth rate in labor productivity for five years preceding the play year;

The basic wage fund for industrial production personnel established by the association (enterprise) for the year with quarterly allocations. The yearly basic wage fund with quarterly allocation, computed on the basis of expected fulfillment, is defined more precisely according to data of the yearly account and is not subject to change in the course of the year;

The amount of increase in the basic wage fund for industrial production personnel for the year with quarterly allocation, calculated according to the normative wage fund growth for each percent of increase in the volume of production output. The amount of increase in the basic wage fund may be defined more precisely in connection with the more precise definition of the wage fund according to data of the yearly account;

The wage fund for workers occupied in mastering new capacities, for the year with quarterly allocation;

The wage fund for non-industrial personnel and non-staff workers, ror the year with quarterly allocation;

The general wage fund account according to all personnel groups, for the year with quarterly allocation.

The production associations (enterprises) inform the institutions of the Gosbank of the USSR of the above mentioned indices in a report conforming to supplement form No 8, according to Gosbank USSR instruction No 24 of 3 December 1980. Joined to the report is the account of the basic yearly wage fund for industrial production personnel, the content of which is cited in the supplement to the actual letter.

2. For production associations (enterprises) for which, in accordance with the conditions of the economic experiment for industrial production personnel, there is established in the plan a wage norm per ruble of production (wage norm per unit of production in physical terms) or a wage fund in an absolute amount; for scientific research organizations for which a norm for formation of a wage fund is established (in percents with respect to the volume of scientific research, experimental design and technological work); for enterprises newly set into operation for which a wage fund is established in an absolute amount; for enterprises of small handicrafts industry for whose industrial production personnel a normative wage fund in established in percents according to the volume of commodity production; for all these, wage assets are issued in the manner stipulated by Gosbank instruction No 24 of 3 December 1980, taking into account individual characteristics following from corresponding industrial systematic instructions on normative formation of a wage fund, established by the ministries with the agreement of the Gosplan USSR.

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3. Control over the maintenance of production associations (enterprises) in which the growth of the average wage outstrips the growth of labor productivity in the yearly plan and, in fact, for a year [of the course of redundance ?] corresponding to part of the material incentive fund or its transfer into the fund of social and cultural measures and housing construction is accomplished in the manner stipulated by the Gosbank USSR letter No 2495 of 3 August 1977.

4. The organization of work in the institutions of the Gosbank USSR for preliminary and subsequent control over expenditures of wage funds and assets for bonuses for production associations (enterprises), according to which the economic experiment is carried out, is accomplished in the generally prescribed manner in accordance with Gosbank USSR instruction No 24 of 3 December 1980 and other instructions.

Examples of Calculations

From the Supplement to the Letter to Gosbank USSR

Calculation of the Basic Wage Fund for Industrial Production Personnel in the Production Association (Enterprise) for 198...

1. Amount of added wages for industrial production personnel in the previous year, in thousands of rubles   4,060.0

2. Amount of wage fund over-expenditure accounted for by the association (enterprise) at the end of the year under review, in thousands of rubles   48.0

3. Amount of unused savings from the wage fund at the end of the year under review, in thousands of rubles   -

4. Basic wage fund for industrial production personnel (line 1 - line 2 + line 3), in thousands of rubles   4,012.0

5. Average annual growth rate of labor productivity for 5 years preceding the current year, in percent   104

6. Planned growth rate of labor productivity for the current year, in percent   103

7. Extent of reduction in the planned growth rate of labor productivity as compared with the average annual growth rate of labor productivity for five years preceding the current year (line 5 - line 6), in points   1

8. Normative increase in the wage fund for industrial production personnel for each percent of increase in the volume of production output established for the current year   0.3

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9. Basic wage fund for industrial production personnel, taking into account its reduction in connection with the reduction in the planned growth rate of labor productivity as compared with the average annual growth rate for 5 years preceding the current year
(line 4 - $\frac{\text{line 4 X line 7 X line 8}}{100}$), in thousands of rubles   4,000.0

Calculation of the Extent of Wage Assets due in the Production Association (Enterprise) for Industrial Production Personnel for the 4th Quarter

	Example 1	Example 2
1. Average annual growth rate of labor productivity for 5 years preceding the year under review, in percent	104	104
2. Planned growth rate of labor productivity for the year under review, in percent with respect to the previous year	103	103
3. Actual growth rate of labor productivity for the year under review, in percent with respect to the previous year	102	102
4. Extent of reduction in planned growth rate of labor productivity as compared with the average annual growth rate of labor productivity for 5 years preceding the year under review (line 1- line 2), in points	1	1
5. Extent of reduction in actual growth rate of labor productivity for the year under review as compared with the average annual growth rate of labor productivity for 5 years preceding the year under review (line 1 - line 3), in points	2	2
6. Extent of reduction in growth rate of labor productivity for the year under review in which, in addition, the basic wage fund established for the year is subject to reduction (line 5 - line 4), in points	1	1
7. Actual growth rate in volume of production output for the year under review, in percent with respect to the previous year	101	101
8. Basic wage fund for industrial production personnel established for the year, in rubles	4,000,000	4,000,000

9.   Normative increase in the wage fund for each
percent of increase in the volume of production
output, established for the current year   0.3   0.3

10.   Amount of the basic wage fund, taking into
account its reduction in connection with the
reduction in actual growth rate of labor produc-
tivity for the year under review

$$(\text{line } 8 - \frac{(\text{line } 8 \text{ X line } 6 \text{ X line } 9)}{100}$$, in rubles   3,988,000   3,988,000

11.   Amount of increase in the basic wage fund
for each percent of increase in volume of
production as a whole for the year

$$\frac{(\text{line } 10 \text{ X } (\text{line } 7-100) \text{ X line } 9)}{100}$$, in rubles   11,964   –

12.   Amount of due wage assets for industrial
production personnel as a whole for the year
under review (line 10 + line 11), in rubles   3,999,964   3,988,000

13.   Supplement issued in the prescribed manner
to the wage fund in the 1st, 2nd, 3rd and 4th
quarters for industrial production personnel,
in rubles   50,000   50,000

14.   Total due wage assets for industrial
production personnel as a whole for the year
under review (line 12 + line 13), in rubles   4,049,964   4,038,000

15.   Amount of due wage assets for industrial
production personnel in the 1st, 2nd and
quarters of the year under review, taking into
account the supplementary wage fund issued in
the prescribed manner for this personnel
(according to the data of graph 6 in the
report on added and due wages), in rubles   3,070,000   3,070,000

16.   Amount of dues wage assets for industrial
production personnel in the 4th quarter of the
year under review (line 14 - line 15, in
rubles   979,964   968,000

[No 8, Feb 84 p 23]

[Text] We continue publication of the methods established for enterprises
and associations of ministries conducting the economic experiment.
Printed below are the systematic instructions on normative wage fund
formation for 1984-1985 established by the Ministry of Electrical Engineering
Industry and coordinated with Gosplan USSR on 16 September 1983, with the
amendments and changes of 6 February 1984, as well as a commentary by the
department of planning improvement of Gosplan USSR.

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1. The wage fund, according to the plan for next year, for the ministry and the production associations (enterprises) is formed from the amount of the wage fund of the base year and the supplementary fund, calculated according to the norm of increase for each point (percent) of net (normative) production increase (taking into account the proportions of economic effect from the production and application among consumers of new electrical engineering products with a higher category of quality).

The norms of increase in the wage fund are established up to the beginning of elaboration of projects of the 1984-1985 plan, on the same level as that for 1984-1985, and are retained unchanged until the end of the 11th Five-Year Plan.

2. The Fixed norms are established, as a rule, on the basis of receipt by the operating enterprises of the whole increase of production owing to the growth of labor productivity and the maintenance of a correlation between the growth of labor productivity and the average wage, provided for in calculations of the five-year plan for 1984-1985. They may be differentiated by taking into account the correlation, formed in production associations, between the permanent part of the wage fund and that part which changes according to production growth.

3. The basic wage fund for the drafting of the 1984 plan is the fund according to the account (expected fulfillment) for 1983. For production associations (enterprises) which, according to the results of work for 1983, permitted an over-expenditure of the wage fund, the basic fund is determined with a deduction of the amount of this fund's overexpenditure, computed for the production association (enterprise) at the end of the year.

The basic wage fund for the drafting of the 1985 plan is determined as the amount of the actually formed wage fund according to the account (expected fulfillment) for 1984, including the wage fund issued in the plan this year (1984) for securing the labor force for new projects and capacities.

For production associations (enterprises) which, according to the results of work for 1984, permit over-expenditure of the wage fund, the basic fund is determined with a deduction of the amount overspent from this fund, computed for the production association (enterprise) at the end of the year.

The basic wage fund of production associations (enterprises) is increased by the amount relative to the savings in the wage fund, computed for production associations (enterprises) at the end of the year.

The basic wage fund for the ministry is determined as the sum of the basic funds of the production associations (enterprises) with the addition of the remainder of unused reserve assets for the wage fund of industrial production personnel in the base year.

4. The basic wage fund of operating production associations (enterprises) remains intact providing the average annual growth rate of labor productivity for five years, including the play year, exceeds or equals the actual average

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annual growth rate of labor productivity for five years preceding the plan year.

In case of non-observance of the stated conditions, the wage fund of the base year is reduced for each percent of reduction in the average annual growth rate of labor productivity for five years, including the plan year, as compared with the average annual growth rate of labor productivity for five years preceding the plan year, to an extent equal to the value of the established norm of increase in the wage fund.

A reduction of the basic wage fund is not carried out if the production association (enterprise) fulfills, in the plan year, the five-year plan goal for growth of labor productivity, computed by the increased results from the beginning of the five-year plan.

A reduction of the basic wage fund in experimental enterprises, subject to the growth rate of labor productivity, is not carried out.

5. The basic wage fund and other labor indicators calculated according to expected fulfillment are defined more precisely by data of the annual account. Allocation of the annual basic wage fund on a quarterly basis is carried out by the production associations (enterprises) independently and, after more precise definition by data of the annual account, is not subject to change.

6. For ministries and production associations (enterprises) implementing introduction and placing into operation of large scale production capacities, a supplementary wage fund is issued which is earmarked for paying workers engaged in mastering new capacities. The prescribed supplementary fund is taken into account separately in the labor plan.

Further increase of the wage fund for ministries and production associations (enterprises) implementing the placing into operation of new capacities is conducted to the extent of exceeding the amount of the fund's increase, computed according to the norm, over the amount of the supplementary fund issued for placing new capacities into operation.

Lists of new enterprises and newly introduced large-scale production, together with instructions on the terms of mastery of capacities, are established by the ministry.

7. For production associations (enterprises) whose normative terms for mastery of new capacities have expired, there is no supplementary wage fund earmarked for paying workers engaged in mastering these capacities.

The planning of a wage fund for such production associations (enterprises) is accomplished in the manner established for operating enterprises.

8. The planned wage fund for industrial production personnel in production associations (enterprises) is composed of the sum of the wage fund normative increase for each point (percent) of increase of net (normative) production,

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taking into account the proportions of economic effect from the production and application among consumers of new electrical engineering products of a higher category of quality.

The supplementary wage fund, calculated according to the normative increase for each point (percent) of net (normative) production, is determined by the production associations (enterprises) for a year with quarterly allocations.

The wage fund for non-industrial personnel and non-staff employees per quarter is established by the higher organization for the production associations (enterprises).

The wage fund for workers newly hired in operating enterprises and objects is established quarterly by the higher organization.

The general wage fund is determined by the production associations (enterprises), computed quarterly.

9. The ministry is granted the right to use the wage fund reserve in case of a temporary worsening of work indices in production associations (enterprises) during a period of massive assimilation of high efficiency technology, structural improvements in the production of products, reduction of raw materials, natural calamities, stoppage of equipment not provided for by the plan and not dependent upon the production associations (enterprises) and others, as well as in order to cover over-expenditures of the wage fund.

In these cases, the ministry issues a supplementary wage fund to the production associations (enterprises) without changing the industrial production personnel norm. Such a wage fund for industrial production personnel is taken into account separately.

10. The administrations of production associations (enterprises) are granted the right to establish, with the agreement of the trade union organization, by means of wage fund savings, calculated according to the prescribed indices and norms:

Higher supplementary payments to wage rates for highly qualified workers engaged in especially responsible work, for professional skill (for workers of the IV category--up to 16, of the V category--up to 20 and of the VI category--up to 24 percent of the wage rate); raises for highly qualified technical engineering workers and employees to the extent of up to 50 percent of salary. The extent of these raises and supplementary payments are to be determined by taking into account the personal contribution of each worker to the increase of production and the raising of its quality, the reduction of labor intensiveness, materials intensiveness and the fulfillment of other indices. Such raises and supplementary payments are reduced or rescinded completely in case of a worsening in work indices;

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Supplementary payments for holding two jobs (posts) for workers of various personnel categories (technical engineering workers, employees, laborers, etc), without approval by the higher organs of the list of combined jobs;

Raises and supplementary payments to salaries (wage rates) for workers in the management apparatus are paid out by means of wage funds savings and are not included in the maximum allocations for management apparatus maintenance.

Salaries for highly qualified workers engaged in particularly important or responsible work, to the extent of 250 rubles per month (but not higher than the salaries of foremen, taking into account the 50 percent raise).

The ministry is granted the right to institute raises in salaries for directors of production associations (enterprises) by means of the wage fund savings of these production associations (enterprises).

11. Control over expenditures by production associations (enterprises) of wage funds is accomplished by the institutions of Gosbank USSR on a quarterly basis, based on the yearly basic wage fund allocation to the production associations (enterprises) for the corresponding quarter, established for a year of normative increase in the wage fund for each percent of increase in the volume of production output as compared with the corresponding quarter of the previous year. In case of a lack of increase in the volume of production output and its reduction of wage fund assets for industrial production personnel, it is issued within the limitations of the basic wage fund. The extent of wage fund assets due the production associations (enterprises) are defined more precisely by the results of their work for the year.

The issuing of wage assets to production associations (enterprises) is carried out by the institutes of Gosbank USSR in the manner prescribed by Gosbank USSR with the agreement of Gosplan USSR.

12. The ministry may introduce additions and changes in the actual Systematic Instructions during the course of the experiment with the agreement of Gosplan USSR.

Sectorial Particularities of the Method

A Commentary by the Department of Planning Improvement of Gosplan USSR

As in the published Systematic Instructions for the Ministry of Electrical Engineering Industry, so in the corresponding methods for the other four ministries carrying out the experiment, a strengthening of the dependence of the amounts of wage funds on the final results of production and the increase of its efficiency is provided for.

This important condition of the economic experiment is ensured by the formation of the wage fund on the basis of progressive, stable economic norms established before the drafting of plans and the achievement of work results. In addition, taking into account the specific character of the enterprise's work, it is permitted to apply different kinds of norms for the formation of the wage fund.

The normative increase of the wage fund for each percent of increase in the overall volume of production, not applied in practice earlier, has been accepted for enterprises of the Ministry of Electrical Engineering Industry, the Ministry of Food Industry of the Ukrainian SSR, the Ministry of Light Industry of the Belorussian SSR and the Ministry of Local Industry of the Lithuanian SSR (except for enterprises of the handicrafts industry in this ministry).

In contrast to this, a wage norm for each ruble of production, determined by the index of net (normative) production, is applied in enterprises of the Ministry of Heavy Machinery.

Thus, in the first case, if, by means of the norm, only the increase in the basic wage fund for industrial production personnel is determined, in the second case--in enterprises of the Ministry of Heavy Machinery--the overall extent of the wage fund for industrial production personnel is determined by the norm. An analogous norm is also applied for handicrafts enterprises of the Ministry of Local Production of the Lithuanian SSR.

In the enterprises of the Ministry of Food Industry of the Ukrainian SSR, the normative increase in the wage fund for industrial production personnel may be established not only for the increase in net (normative) production, but also for the increase in commodity production. The same norms for enterprises of the Ministry of Local Industry of the Lithuanian SSR are established for the increase in commodity production, while for enterprises of the sewing industry of the Ministry of Light Industry of the Belorussian SSR they are established for an increase in the normative value of processing.

In enterprises of the Ministry of Electrical Engineering Industry, the increase in net (normative) production, which serves as the basis for calculating the increase in the wage fund for industrial production personnel, is determined by taking into account the proportions of the economic effect from the production and application among consumers of products of a higher category of quality (Systematic Instructions for the Ministry of Electrical Engineering Industry, point 1). In enterprises of other ministries carrying out the experiment, a calculation of the effect among consumers in order to determine the increase or overall volume of production is not provided for.

For enterprises of the Ministry of Food Industry of the Ukrainian SSR that convert agricultural raw materials, the bread baking industry, as well as the food industry of local subordination where, through no fault of their own (decreased demand, reduction of raw resources and materials, etc), the volume of production may decrease, a procedure for wage fund formation is established which differs in several respects from the procedure for the formation of this fund in enterprises of ministries carrying out the experiment, including also enterprises of other subsectors of the Ministry of Food Industry of the Ukrainian SSR. This procedure provides for definite benefits and guarantees to enterprises with this calculation, in order that a groundless reduction of the wage fund may not occur in case of a decrease in the indices of their work through no fault of their own.

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In production associations (enterprises) of the Ministry of Light Industry of the Belorussian SSR, the basic wage fund is maintained under the same conditions as are defined in point 4 of the Systematic Instructions for the Ministry of Electrical Engineering Industry. This condition does not extend to enterprises of the Ministry of Food Industry of the Ukrainian SSR or the Ministry of Local Industry of the Lithuanian SSR, where the normative increase in the basic wage fund is also applied.

In addition, however, in enterprises of the Ministry of Local Industry of the Lithuanian SSR, the basic wage fund is maintained, providing the volume of commodity production in the plan year exceeds or equals the anticipated volume of production of the base year. In case of a decrease in the volumes of commodity production as compared with the previous year, the basic wage fund is maintained, provided that the limit on the number of industrial production personnel in the plan year does not exceed the limit on the number for the previous year; while if the limit is exceeded, the basic fund is reduced by one percent for each percent of increase over the limit.

Under the conditions of the experiment, there is an expansion of the rights of the enterprise with respect to the utilization of wage fund savings, as is reflected in the Systematic Instructions for the Ministry of Electrical Engineering Industry in point 10 and correspondingly in the methods of other ministries carrying out the experiment. The only difference in the methods is that for the Ministry of Food Industry of the Ukrainian SSR, the Ministry of Light Industry of the Belorussian SSR and the Ministry of Local Industry of the Lithuanian SSR, the salary scale provided for highly qualified workers engaged in particularly important and responsible work has an extent of up to 230 rubles per month and not up to 250 rubles per month, as in the Ministry of Electrical Engineering Industry and the Ministry of Heavy Machinery.

As is evident from the published text, there are increases in supplementary payments to highly qualified workers engaged in particularly responsible work and for professional skill (in industrial enterprises not taking part in the experiment, their extent is: for workers of the IV category--up to 4 percent, of the V category--up to 8 percent and of the VI category--up to 12 percent of the wage rates), as well as raises for highly qualified technical engineering workers and employees (at the present time, in industry, these must not exceed 30 percent, except for raises for designers and technologists).

Aside from this, for enterprises taking part in the experiment, it has been established that salary raises for workers in the management apparatus, paid out by means of wage fund savings, are not included in the maximum allocations for the management apparatus composition. Supplementary payments for holding two jobs (posts) for workers in various personnel categories are made without establishing a list of combined jobs for the higher organs. Currently in industry, the administration of the enterprise, with the agreement of the trade union organization, has the right to permit the holding of two jobs (posts) only within the limitations of one personnel category, for example a white collar employee is permitted to hold two white collar jobs, etc.

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Thus, under the conditions of the experiment, on the one hand the requirements for the "earning" of a salary are increased: its growth is made possible only by means of a simultaneously greater volume of production, labor productivity and other economic indices. On the other hand, the rights of the enterprise to utilize wage fund savings obtained by maintaining these conditions are extended.

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CSO: 1828/98

INCENTIVES PROMOTING PRODUCTION INTENSIFICATION EXPLORED

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/Article by Professor Z. Korovina, doctor of economic sciences: "Providing Incentives for Production Efficiency and Intensification"/

/Text/ At the present-day stage great importance is being accorded to providing economic incentives in the development of the socialist economy. Since this is one of the links in the economic mechanism, it is inextricably bound up with the implementation of the nationwide, personal, and group interests by means of creating material motivation for achieving high end results in production.

Within the system of a socialist society's economic interests, the interests of the society as a whole, Yu. V. Andropov emphasized, are "the most important reference-point for developing an economy which is based on socialist property ownership. But, of course, it does not follow from this that, in the name of the common welfare, socialism, so to speak, suppresses or ignores personal interests or the local, specific needs of various social groups. By no means is this the case.... One of the most important tasks in improving our national economic mechanism consists in ensuring a precise accounting of these interests, achieving their optimal combination with the interests of the nation as a whole, and thus utilizing them as a moving force for the growth of the Soviet economy, increasing its effectiveness, labor productivity, as well as universally strengthening the Soviet state's economic and defensive might."[1]

Personal needs and personal interest constitute one of the main factors of directly influencing production, since it is at the enterprise level that the following occur: a direct combination of the labor force with the means of production; the creation of those consumer values which are intended to satisfy personal and production needs, and where the principal tasks of the present-day phase of development are being solved, i.e., intensifying and increasing the efficiency of industrial and all social production.

Within a system of public ownership of the means of production, each working person becomes a master in social production. Therefore, he is vitally concerned for its development, to satisfy to the fullest possible extent the growing material and spiritual needs of all the members of the society, including his own interests as well. Inasmuch as personal interest functions under the conditions of the nationwide ownership of the means of production, his activity must be subordinated to the nationwide interest.

The fullest satisfaction of personal needs is directly dependent on the results of the enterprises' production activities and, in the first place, on the operational efficiency of each worker in socialist production, for only what has been produced can be consumed. Consequently, each worker "receives back from society just as much, allowing for deductions, as he himself contributes to it."[2]

Under the present-day conditions of the limitations and increased costs of natural resources, production will develop on an intensive basis only when the yield on each ruble of invested funds will outpace consumption, i.e., when production efficiency increases. It follows from this that the degree of satisfying the needs of a society and increasing production efficiency, based on its intensification, must be among the most important criteria for evaluating the activity and structure of a system for providing incentives at all the hierarchical levels of management (sector, enterprise, etc.). Moreover, each enterprise must turn out products in an amount, products list, and quality which strictly meet the delivery plans for products in accordance with the contractual agreements made with the customers; these have been calculated in accordance with the available equipment and raw materials. Therefore, improvement in the system of providing economic incentives must be carried out in such a way, on the level of industrial enterprises and production associations, as to create a material motivation on the part of every worker and the entire group to attain a high degree of production efficiency, based on its intensification, along with a complete fulfillment of the contractual agreements regarding the delivery of high-quality products.

The aggregate of forms and methods being used in industry for providing incentives does not fully carry out the tasks imposed on it and weakly stimulates the increase in production efficiency and intensification. Today this system and the practice of applying it are in need of further improvement. Our industry has considerable experience at its disposal for working out and applying forms and methods for providing incentives at various stages of its own development.

An analysis which was carried out at enterprises in five industrial sectors during the period from 1965 through 1981 has shown that an exceptionally broad aggregate of forms, methods, and means of providing incentives is being utilized in management practice. Above all, this is an aggregate of forms and methods of payment for labor, drawn from the wage fund. At the same time as payment according to the wage rates, salaries, and piece-work amounts, at enterprises in all industrial sectors considerable payments are being made from the wage fund in the form of bonuses and other additional payments. Functioning in industry are dozens (20--40 and more) forms of awarding bonuses from the wage fund: for fulfilling the plan for the shop or brigade, completely fulfilling the volume of work, fulfilling the development norms, for time actually worked off, for high-quality servicing of equipment, expanding the service zones, reducing the equipment idle times, cutting down on the length of time required for repairs, increasing the extraction of useful substances, economizing on raw materials, fuel, and energy, + e lack of or reduction in defects, for working with a personal style, etc. These and other bonuses are paid out for partial results of production, frequently when the plan for the workshop and the enterprises as a whole has not been fulfilled.

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A significant share of the wage fund is composed of various additional payments and, in the first place, those in accordance with labor legislation. These include paid vacations, paid breaks for feeding a baby, payment for idle times which are not the workers' fault, and additional payments for overtime; also included here are payments for work on holidays and days off, for night work, supervision of a brigade, for carrying out social obligations, etc.

Bonuses and additional payments constitute a significant proportion within the total wage fund, reaching 50 percent in the mines[3] and 35 percent in the enterprises of other industrial sectors. Among workers this percentage is higher by 1--3 percentage points. The size and growth rate of bonuses and additional payments, as a rule, do not directly depend on the end results of the activities of the enterprises nor, in a number of cases, on the results of the shops' work. With regard to the size, contents, and force of their stimulating effect on each worker, the aggregate of the forms and methods of providing incentives from wage funds should be as significant, important, and effective as possible. However, because of the orientation of the forms of awarding bonuses not for end results but rather for partial results of production, they do not exert a substantial influence on the achievement of high end results of production for an enterprise as a whole.

Within the aggregate of the forms and methods of economic incentives being applied, a particular place is occupied by the following funds: material incentives (FMP), socio-cultural measures and housing construction (FSKMiZhS), and production development (FRP). They are formed in accordance with specific norms, fundamentally from profits, and are supposed to create a group motivation for fulfilling the state plans, to increase production efficiency and work quality.

The material incentives fund was designed to pay out supplementary awards to workers for the end results of the work of an enterprise's group in the form of bonuses, one-time encouragements, rewards for a year's results, etc.

The fund for production development should be used for financing the technical development of enterprises, i.e., to introduce new equipment, mechanize and automate production, and modernize equipment. The purpose of the fund for socio-cultural measures and housing construction is to satisfy a group's social needs. It is used along two lines. The former is connected with allocating subsidies to plant cafeterias, Pioneer camps, payment of travel passes, etc. for workers and their families, while the latter is linked with the construction and expansion of cultural-everyday and medical institutions, as well as apartment houses.

At the present time, moreover, modest in over-all size but numerous centralized and special (targeted) incentive funds are being formed and utilized independently. From among the centralized funds being formed by means of deductions from the appropriate funds of enterprises (the FMF, FSKMiZhS, FRP, the fund for awarding bonuses for aiding efficiency improvement and inventions, etc.), with regard to importance and size, we should particularly single out the integrated fund for the development of science and technology, which has been created in the industrial ministries by means of deductions from the plan profits of enterprises and organizations under the ministry involved. It is

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intended for financing work on creating and introducing new equipment as well as enhancing product quality at enterprises and in scientific-research and experimental-design organizations.

The special (targeted) material-incentive funds are created at enterprises in order to award bonuses for specific, partial production results, in particular, for economizing on fuel, electric and heat energy, the creation and introduction of new technology, the over-all mechanization and automation of production, the high-quality manufacture and on-schedule shipment of products for export, for the collection, storage, turnover, and shipment of scrap and waste-products of ferrous and non-ferrous metals, etc. Basically constituting the source of awarding the bonuses are the savings obtained from carrying out the appropriate operations.

Thus, use is made at the enterprises, as it were, of four self-constituted groups of forms of providing incentives, each of which includes forms which are diverse with respect to their functional purposes and which are repeated in various groups. For example, for economizing on material and energy resources, forms have been created and bonuses are awarded from the wage fund, the material incentives fund, and special funds. And financing work on introducing new equipment is carried out from two funds specially formed for this, i.e., the unified fund for the development of science and technology, and the fund for production development, as well as by means of centralized capital investments, amortization for renovation, production costs, and bank credits.

The following, perfectly legitimate question arises: why is one and the same result awarded bonuses via several forms and by means of various funds, and why create several funds to finance the carrying out of the same type of work? This question becomes even more acute if we take into account the fact that in management practice use is made of quite complex principles of forming stimulating funds (especially the material incentives fund). Furthermore, the economic incentive funds being formed at the enterprises are partially or entirely carried over into the ministry's centralized funds and then are returned, in part, to the enterprise concerned, thereby creating extra bookkeeping correspondence. Analysis which has been conducted convinces us that the complex mechanism being used for forming and distributing a considerable number of funds and means for providing incentives is not necessary, is not justified by the objective conditions of production, and requires simplification. This is all the more true in that the stimulating effect of each of the enormous number of forms, methods, and incentive funds used for achieving end results of production is extremely insignificant.

Such a conclusion was drawn on the basis of studying the dependence of the level and growth rate of the incentive funds and means on the level and growth rate of the principal indicators of the enterprises' activities. For this purpose, all the forms and funds (means) being used at enterprises were combined into two groups depending on their functional influence on the object of stimulation. Included among the first group are forms, methods, and means of stimulation designed to provide material incentives for personal and group results of labor, independent of the means, funds, and sources of their formation. This group is called the material incentives group (wage fund). Concentrated therein are the wage fund, the material incentives fund, as well as

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special and centralized funds, intended for paying out monetary and rewards in kind to workers.

The other group—providing incentives for intensifying production—encompasses all the funds and means for stimulation, directed at financing works with regard to introducing new equipment into production lines (the fund for developing production, the unified fund for developing science and technology, centralized capital investments, amortization for renovation, etc.). On their correct utilization depend the effectiveness of re-tooling, modernization, expansion, and introduction of new machinery and equipment, new technologies and types of raw material, energy, the manufacture of new types of products in existing shops, as well as automating production lines and modernizing equipment.

Analysis of the forms and means of providing incentives with respect to the first group has shown that 77—80 percent of the entire payment fund (Table 1) consists of payments from the wage fund, 4—12 percent—from the material incentives fund, and up to 15 percent—from miscellaneous sources (including by means of social insurance funds). Moreover, payment by wage rates, salaries, and piece-work amounts ranges from 50 to 63 percent, bonuses—from 12 to 33 percent, supplementary payments—from 15 to 25 percent, and miscellaneous pay-outs—from 0.1 to 6 percent. Over the extent of many years the proportion of bonuses and supplementary payments has grown at most enterprises. The size of the entire payment fund and the average wage has also increased, frequently by means of increasing the bonus awards and various supplementary payments and pay-outs. Moreover, only 4 percent of the payment fund, a portion of the bonuses from the FMP, are linked with the end results of the enterprises' activities.

The increase in the proportion of bonuses and supplementary payments is usually explained by the necessity of bringing the average wage up to a certain level. Such instances do take place. The disproportional growth of the payment fund is a result of weak monitoring controls on the part of the higher-ranking economic, planning, and statistical organs. Increase in the average wage has also been caused (to be sure, artificially) by attracting workers from other enterprises. This is particularly evident in the coal, machine-building, and metallurgical industries.

In analyzing the labor-payment fund, as formed from all sources, some quite clear tendencies were revealed. They consisted in the fact that the payment fund for enterprises as a whole and the average wage per worker grew, as a rule, at a more rapid rate than all the end results of an enterprise's production (Table 2). The rate of outstripping by the sizes of the bonuses from all sources, as compared with the indicators of efficiency (labor productivity and profitability of production) is particularly great. Bonuses have been increasing even in cases where the activity indicators of enterprises have declined and the tasks assigned by the plan have not been fulfilled. As a result, the rate of consumption at certain enterprises has proved to be higher than the rate of production. The greatest divergence in these rates has been observed in mines as well as at machine-building and ferrous-metallurgical enterprises.

Analysis of the funds and means for providing incentives included in the second group has allowed us to establish the fact that financing projects

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Table 1

Structure of the Fund for Payment of Industrial-Production Personnel (1981)

in %

Enterprise	By Sources of Payments			By Functional Designation			
	From the Wage Fund	From the Material-Incentives Fund	From Miscellaneous Sources	Payment by Wage Rates, Salaries, Estimates	Bonuses from All Sources	Payments by law from All Sources (including Social Insurance)	Miscellaneous Pay-Outs (Business Trips, Work Clothes, etc.)
Donetsk Machine-Building Plant imeni Komsomol of the Ukraine	80.1	8.0	11.9	57.0	21.6	19.2	2.2
Gorlovsk Machine-Building Plant imeni S. M. Kirov . .	85.7	6.1	8.2	63.0	18.1	17.5	1.4
Donetsk Metallurgical Plant imeni V. I. Lenin	81.4	8.4	10.2	55.2	19.2	24.5	1.1
Zhdanov Azovstal' Metallurgical Plant imeni S. Ordzhonikidze	82.1	7.9	10.0	54.4	20.5	21.8	2.8
Donetsk Chemical Reagent Plant	80.4	6.6	13.0	62.4	12.0	22.2	3.4
Lisichansk Soda Plant	80.7	4.1	15.2	62.1	13.0	17.3	7.6
Mine Administration imeni M. Gor'kiy.	85.3	2.9	2.6	47.6	23.7	25.2	3.5
Mine imeni A. F. Zasyad'ko	85.9	3.4	10.7	39.6	33.5	22.7	4.2
Donetsk Knitted Goods Production Association. . . .	80.2	12.0	7.8	58.6	25.3	15.9	0.2
Donetsk Margarine Plant	77.1	12.5	10.4	63.2	19.7	17.0	0.1

for re-tooling, modernization, expansion, introducing scientific and technical measures at existing shops and introducing suggestions by inventors and efficiency experts has been carried out by means of funds specially created for this purpose (the fund for production development, the integrated fund for the development of science and technology) as well as from other means and deductions from the enterprise, i.e., the profits, production costs, and amortization for renovation, as well as budget appropriations for capital construction and bank credits. Furthermore, depending on the amount of outlays spent on production intensification and the size of the existing funds and means,

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Table 2

Dynamics of Indicators in % (1980/1975)

(1) Предприятие	(2) Сумма прибыли от реализации	(3) Рентабельность производства	(4) Производительность труда	(5) Объем реализации	(6) Среднегодовая стоимость основных производственных фондов	(7) Фонд оплаты труда — всего	(8) в том числе премий	(9) Заработная плата на одного трудящегося
(10) Донецкий машиностроительный завод им ЛКСМУ	102.3	75.9	94.5	95.1	143.0	116.1	128.1	108,9
(11) Горловский машиностроительный завод им С М Кирова . . .	92.5	60.2	110.6	112.6	159.4	117.4	146.3	109,2
(12) Донецкий металлургический завод им В И Ленина	±100.0*	+118.3*	95.1	109.3	160.5	136.5	160.9	113.1
(13) Ждановский металлургический завод «Азовсталь» им. С. Орджоникидзе	68.9	31.6	98.6	111.0	165.4	126.1	131.5	115.6
(14) Донецкий завод химических реактивов .	81.0	116.8	110.3	115.9	150.3	108.0	95.3	104.3
(15) Лисичанский содовый завод	132.1*	+127.4*	87.8	85.7	125.3	111.2	115.1	111.8
(16) Шахтоуправление им М Горького . .	=112.1**	=124.9**	65.4	87.9	93.7	159.6	198.0	115.9
(17) Шахта им. А Ф Засядько	42.3	38.4	83.83	90.88	105.8	180.5	360.6	148.3
(18) Донецкое производственное трикотажное объединение	187.12	163.63	113.65	112.65	107.18	173.5	322.5	113.9
(19) Донецкий маргариновый завод . . .	164.73	122.48	123.25	139.67	112.22	131.2	139.1	122.1

* In the reporting year losses amounted to 100 percent of the profits of the base year.

** Growth of losses and unprofitability

Key:
1. Enterprise
2. Total profits from sales
3. Profitability of production
4. Labor productivity
5. Sales volume
6. Average yearly value of fixed production capital assets
7. Payment fund--in toto
8. Including bonuses
9. Wages per worker
10. Donetsk Machine-Building Plant imeni Komsomol of the Ukraine
11. Gorlovsk Machine-Building Plant imeni S. M. Kirov
12. Donetsk Metallurgical Plant imeni V. I. Lenin
13. Zhdanov Azovstal' Metallurgical Plant imeni S. Ordzhonikidze
14. Donetsk Chemical Reagent Plant
15. Lisichansk Soda Plant
16. Mine Administration imeni M. Gor'kiy
17. Mine imeni A. F. Zasyad'ko
18. Donetsk Knitted Goods Production Association

the proportion of the sources of financing was sharply different at the enterprises of a single sector and at various sectors of an industry, as well as at one enterprise by years.

During certain periods budget allocations have comprised a significant proportion within the total amount of expenditures on intensification (up to 50 percent) in carrying out projects with regard to re-tooling, modernizing, and expanding enterprises. A considerable proportion within the total outlays during certain years constituted the fund for production development and in it-- amortization for renovation. The predominant part of it was included in capital investments and was spent on re-tooling.

The analysis which was carried out on the forms, methods, and means of stimulation has convinced us that their principal shortcoming is caused by the application of a wide aggregate of means and funds for providing incentives as well as by the orientation of many of them toward partial, intermediate results. In order to increase the stimulating influence on the achievement of high end results of production, it is necessary, in our opinion, to sharply reduce the number of such forms by means of combining the duplicating forms and eliminating the funds and means which are insignificant in size; we must also orient all stimulating systems towards the attainment of high end results.

Based on the four groups of stimulating forms which have taken shape in economic practice, it is proposed to create two, with the inclusion in each of them of stimulating forms which are homogeneous with respect to their functional influence on the object. One of them is the provision of material incentives for workers, while the other is stimulating production intensification. In accordance with the above-named groups, it would be feasible, instead of the many existing forms (and means) of stimulation, to form only two funds of economic stimulation. The first--the labor-payment fund--is necessary for organizing all types of pay-outs with respect to the quantity,

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quality, and results of labor in the form of payments by wage rates and salaries, piece-work rates, payments of bonuses, and the organization of supplementary payments. The second--the integrated fund for stimulating production intensification--is necessary for financing projects with respect to introducing new equipment (also with respect to re-tooling, modernization, expansion, the introduction of scientific and technical measures at existing shops, and the suggestions of efficiency experts and inventors).

The size of the labor-payment fund for each enterprise should be determined by the quantity and quality of the worker's labor as well as by the given enterprise's production efficiency. The workers' incomes should be balanced against the amount of consumer goods and services which, at each given period, can be offered by our society to groups and to individual workers in order to observe the optimal ratio size between the purchasing capacity of the members of the society and the availability of material (affordable) goods and services. In the last decade this ratio was violated.

With respect to its internal contents, the payment fund consists of payments by wage rates, salaries, piece-work rates, and bonuses with various supplementary payments. In order to set up a close dependence of the sizes of the payments by wage rates, salaries, and piece-work rates on the end results of production, it would be feasible to plan the size of this portion of the fund in accordance with the plant labor intensity of each type of output. Inasmuch as this indicator is free from the distorting influence of structural shifts in the products list, the more products a plant turns out, the greater the wage fund it will be able to obtain. Under these conditions it will be unprofitable for a plant to inflate the number of its personnel and increase the proportion of advantageous material-intensive output.

In improving the provision of material incentives for the workers, top-priority attention should be given to the forms, methods, and means of awarding bonuses. Instead of several dozen bonus-award forms for partial production results, the means for which are formed from various sources, it is proposed to create an integrated bonus-award fund by means of direct deductions from reducing production costs (by means of the total profits) for an enterprise as a whole.

Industry has already made use of a system of awarding bonuses by means of direct deductions from reducing comparable commodity production costs, and this system has given a good account of itself. Some economists consider that, at the present time, this indicator cannot be utilized for awarding bonuses because of the low level of comparable output. However, this shortcoming is not difficult to eliminate, since a planned production cost is calculated for each new item, and it can be utilized (taking into account the normative time periods required for development) as a basis for determining the reduction in the costs of comparable commodity production.

Under the conditions of a constant change in the products list, only a reduction of the commodity production cost in comparison with the base level and with the consolidated sectorial and state progressive norms and standard quotas[4] can provide precise information, free from the distorting influence of structural shifts, in order to form a bonus-awards fund. All other indicators of efficiency for an enterprise as a whole, i.e., for labor productivity,

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profitability of production, are significantly influenced by structural shifts, and this complicates their use for forming funds and organizing the awarding of bonuses. This is connected with the fact that the level of labor productivity and production profitability for an enterprise as a whole differs in the production of various items by a factor of 2--8 and more. At the Lisichansk Soda Plant, for example, the profitability and labor productivity in the production of soda ash is lower than in the production of solid caustic soda by factors of 8.8 and 1.9 respectively, and higher than in the production of sodium bicarbonate by factors of 10.0 and 1.3 respectively.

The size of the deductions for the bonus-award funds, depending on the rate of the reduction in the cost of comparable commodity production, can be feasibly worked out by the standard quotas which are unchanging for the five-year plan; we must also take into account the achieved level of production costs and that level (progressive) which is possible with the most improved equipment and production organization. The lower the achieved level of product costs, the higher must be the standard quota for each percentage point of its reduction. Moreover, the total size of the bonus, as established in percentage points of the wage rate, must be strictly monitored. The size of the bonus for the group as a whole and for the individual worker, on the one hand, must be of stimulating value and be tangible, while, on the other hand, it must take into account the ratio among the portions of the additional profits obtained from reductions of the production costs and directed at awarding bonuses and that directed into the state budget. At the present stage, the size of the bonus awards, as has been shown by study and by summing up experience, can range from 20 to 30 percent of the wages.

At the present time opinions are being expressed concerning the need to raise the wage rates for the purpose of increasing the proportion of the wages within the total payment fund. Results of a study have shown that this question requires profound study. On the average, the proportion of the wages amounts to 50--63 percent, bonuses range from 12--33 percent, and supplementary payments--from 15 to 25 percent. Such a bonus size, if it is paid out for a specific end result, is tangible. If the proportion of the wages is increased, there will be an automatic increase in the size of the bonuses and supplementary payments without a corresponding increase in the volume of output and the production efficiency with all the consequences stemming from this. But if we keep the over-all wage unchanged, a wage which is already at a high level even without this, then, with an increase in the rate, there would be a sharp decrease in the size of the bonuses, and this would make them an inefficient form.

A bonus is not a supplementary payment for creating high earnings but rather an incentive to perform better than the average level, and such an incentive must be for genuine not merely apparent achievements and based on standard principles--for engineers, technicians, and ordinary workers.

In determining the size of the bonuses for groups, it is important to take into consideration the contribution made by each one to reducing the production costs by shops and for the enterprise as a whole. For this purpose it is feasible to combine all the factors for reducing production costs into two groups. To the first group we should relegate the reduction of production

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costs by means of introducing new equipment onto the production lines, to the second--by means of discovering and using the internal reserves of production (by means of improving the use of equipment, reducing the expenditure of raw materials, other materials, and fuel, or replacing expensive types of them with cheaper types, by improving product quality, etc.). And, accordingly, it would be feasible to prepare only two positions on awarding bonuses for the existing shops.

At the present time, for example, the awarding of bonuses to efficiency experts and inventors, persons taking part in introducing scientific and technical measures takes place not for genuine but for a provisional effect, which often does not lead to a reduction of production costs for the plant as a whole. Calculations have shown that 50 percent of the suggestions made by efficiency experts have yielded no effect at all, while for the rest the provisional savings have been inflated several times over. Under conditions of production intensification, new equipment and the introduction of efficiency experts' suggestions, as a rule, should lead, in the final analysis, to a reduction of production costs for the plant as a whole.

If all the types of effects boil down to one thing--the reduction of production costs, then the provisional effects and deceptive efficiency experts' suggestions will disappear by themselves.

It would be feasible to individually award bonuses to the groups of new production lines (shops and their aggregates), which have been put into operation after the re-tooling, modernization, and expansion of existing shops. At present new production lines, right after being put into operation, are included among the number of existing shops and the awarding of bonuses (as well as their planning and evaluation) to their groups is carried out in a "boiler-like fashion," according to the over-all cost-accounting indicators of the enterprise. In this case, the plan indicators for the plant as a whole are frequently established by means of adding to the amounts of earlier operating production lines lowered indicators in comparison with the plan of the new facilities due to poor-quality or incomplete introduction of facilities into operation.

As a result of such planning and awarding of bonuses, there has been a sharp increase in the length of the time periods required to develop plan indicators for the new production lines, while the losses reach as much as 10--30 percent of the cost of the facilities introduced. Over the course of many years profitable enterprises are quite often turned into plan-loss operations and suffer considerable losses for many years.

It is for this reason, to a considerable extent, that the country does not obtain sufficient yield from capital investments, and that the achievements of science and technology are not being assimilated into production at a satisfactory pace. In order to speed up the assimilation of new production facilities and reduce their loss factor, in order to increase the efficiency of industrial production, it would be feasible to have the awarding of bonuses to groups on new production lines carried out separately from the existing shops and solely for the assimilation on schedule or ahead of schedule of the planned capacity and production costs. This will allow us to increase the efficiency of the new product lines and the enterprises as a whole, as well as to create the economic conditions for accepting facilities only when they are ready for normal operation.

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Under present-day conditions, when production intensification has become the most important trend of an enterprise's development and the principal source for increasing production efficiency, it is feasible to create (in place of the presently employed funds and means of stimulation, which are poorly coordinated among themselves and the end results of production) at each enterprise an Integrated Fund for Stimulating Production Intensification. It should combine all the presently existing funds and means, which are formed in accordance with various standard quotas from various sources of financing. It will include the following: the fund for production development, the integrated fund for the development of science and technology, amortization for capital repair, budget allocations, loans from the construction bank, profits, means from production costs spent on efficiency improvements and inventions and on introducing innovative scientific and technical measures, etc.

It would be feasible to make the Integrated Fund for Stimulating Production Intensification a carry-over fund and to set it up for a period of 5--10 years with a breakdown by years. This is caused by the fact that production intensification is connected, for the most part, with the re-tooling, modernization, and expansion of enterprises (70--90 percent of all outlays), which for their implementation require several years, necessary to work out the blueprints, manufacture the equipment, carry out operations with regard to the mass replacement of equipment, and the assimilation of plan indicators of the new production lines.

In order to provide justification for determining the size of the integrated fund for production intensification, it is necessary, on the one hand, to calculate the needs for them during the five-year plan with a breakdown by years, and, on the other hand--to determine the existing financial, material, and labor resources at an enterprise, in the sector, and in a region for implementing the intensification process at a given enterprise. The points of departure for determining the size of the fund must be the accumulated service lives and physical age of the installed equipment, as well as the possibilities for obtaining the most up-to-date equipment and technology.

At the present time it is considered that the service lives of the equipment amount to 7--8 years on the average. Experience of the leading plants shows that the average yearly outlays on production intensification amount to 3--10 percent on the average (in a cross-section of one or two five-year plans) of the value of all the production fixed capital assets and from 6 to 30 percent of the value of the machinery and equipment. Such sizes of outlays on production intensification can be considered acceptable (with certain corrections applicable to specific enterprises and industrial sectors). In particular, the standard quotas being considered should be higher at machine-building enterprises, which constitute the basis for intensifying all industrial production. They must also be higher at enterprises where the age of the basic equipment exceeds 20 years.

It seems that the principal sources for forming the given fund must be the means of each enterprise themselves, more precisely, the following: amortization for renovation and capital repairs, receipts from the sale of surplus and unneeded equipment; profits of the enterprise left over after the contribution of all

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payments to the budget and deductions paid to the higher-ranking organs; loans from the construction bank and, in exceptional cases, budget allocations.

What is needed from the higher-ranking organs are strict monitoring controls over the effectiveness of the super-outlays for production intensification. However, under the conditions of increasing the independence of the enterprises, an important condition for intensifying production and increasing its efficiency is the concentration of all funds and means for this purpose in the hands of the enterprise itself.

At the present time five industrial sectors are conducting large-scale experiments on increasing the rights and determining the responsibilities of enterprises for work results. The goal of the experiments is to increase production output and improve its quality, based on improvements in planning, the technical improvement of production, speeding up the development and introduction of new equipment, and heightening the motivation of labor groups to bring about the growth of production efficiency.

In preparing and carrying through these experiments, various methods and ways have been proposed and will be checked out for improving the planning and stimulating production efficiency, based on its intensification. In particular, in the discussion of these questions in the business club of the newspaper PRAVDA[5] opinions were expressed concerning the need to establish, during the course of the experiments, a close dependence between the wage fund and the material-incentives fund and the end results of production, the development of production by means of do-it-yourself and borrowed sources, setting standard quotas for prolonged activity, and eliminating the fractioning of funds for the technical development of enterprises.

The proposals expressed in this article with **regard** to ensuring a close dependence of the payment fund and, above all, the bonus-award fund, on the end results of production and the creation of an integrated fund for setting norms for intensification by means of do-it-yourself methods can be utilized during the course of conducting the experiments and subsequently, in improving the planning and economic stimulation of industrial production.

FOOTNOTES

1. Yu. V. Andropov, "Izbrannyye rechi i stat'i" /Selected Speeches and Articles/, Moscow, Politizdat, 1983, p 236.

2. K. Marx and F. Engels, "Soch." /Works/, Vol 19, p 18.

3. In 1982 the specific proportion of wages in the mines increased in view of a revision of the most recent rates.

4. For a more detailed treatment of this, see PLANOVOYE KHOZYAYSTVO, No 1, 1983, p 23.

5. PRAVDA, 23 November 1983.

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LABOR

NEW MACHINE SHIFT COEFFICIENTS REQUIRED FOR PLANNING

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 3, Mar 84 pp 29-39

[Article by V. Cherevan', docent at the Leningrad Higher Trade Union School and candidate of economic sciences: "Planning the Shift Coefficient"]

[Text] Improving the utilization of fixed production capital is one of the most important directions in the party's economic policy. In his speech at the December (1983) Plenum of the CPSU Central Committee, Yu. V. Andropov spoke of the need "to develop as soon as possible special measures to eliminate bottlenecks and disparities that reduce the efficient use of production potential."[1]

Increases in the shift coefficient and the capital-output ratio offer major opportunities for making efficient use of production potential, fixed capital, and production capacities. Unfortunately, over the past two decades there has been a negative trend in this area in USSR industry, especially in machine building. Specifically, it has been observed in a gradual transition in machine building from a two-shift operating schedule for the majority of equipment to a one-shift schedule. As a result, the time resources for productive utilization of implements of labor has decreased and is now at a lower level than that in other industrially developed countries. For example, metalworking equipment in machine building is in use only 10.3 hours a day with a shift coefficient of 1.35[2]. Statistical data show that only at enterprises under the Ministry of Instrument Making, Automation Equipment and Control Systems and the Ministry of Chemical and Petroleum Machine Building was the shift coefficient higher in 1982 than in 1965. The use of metalworking equipiment at enterprises under other ministries grew worse during this same period.

The shift coefficient at major territorial industrial complexes is rising slowly. Between 1970 and 1982 the shift coefficient for metalworking equipment at machine building enterprises in Minsk increased by 3 percent; in Kiev there was a 2.2 percent increase; in Kishinev, Frunze, and Rostov it remained unchanged; and in some cities it even declined: in Kharkov there was a 2.1 percent decrease; in Sverdlovsk, a 0.8 percent decrease; in Novosibirsk, a 2.4 percent decrease; and in Tula there was a 0.7 percent decrease. The unjustified low workload for production capacities in a number of large cities which do not have a manpower shortage or even have reserves of manpower that have not been drawn into the public sector, is disturbing. For example, in

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Ashkhabad the shift coefficient was 1; in Dushanbe, 1.28; in Tbilisi, 1.21; and in Tashkent, 1.32.

An analysis of the data shows that saturating enterprises with contemporary, highly productive, but expensive equipment, where there is a relatively low shift coefficient, leads to a decline in the capital-output ratio. Between 1970 and 1980 the production output per 1 ruble of average annual value of fixed production capital dropped at industrial enterprises in Odessa by 47 percent; in Kuybyshev, by 45 percent; in Rostov, by 41 percent; in Gorkiy, by 38.2 percent; and so on. This level of equipment workload cannot meet the demands of converting production to an intensive path of development. Therefore, at the December (1983) Plenum of the CPSU Central Committee a request was made to increase the machine shift coefficient.

Theory and practice offer many ways to eliminate these shortcomings. In our view, the most important of these is the inclusion of fixed capital in the sectorial and territorial planning system. Indicators for the utilization of fixed production capital, based on progressive, scientifically sound norms, should be included in annual and five-year plans, along with indicators that summarize and evaluate the economic operation of enterprises, sectors, and regions.

In recent years more and more attention has been given to this problem in scientific research and economic activity. This type of work has been developed in industrial scientific research institutes. A number of the country's machine building enterprises came forward with an initiative to improve norm setting and planning for the machine tool pool and production capacities (including the Sumy Machine Building Plant imeni M. V. Frunze, the Novokramatorsk Machine Building Plant imeni V. I. Lenin, the Novocherkassk Electric Locomotive Plant, etc.)

Still no mechanism for planned management of the utilization of fixed capital has been worked out, however. Planning in this area is not coordinated: some services are responsible for the status of utilization of fixed capital; others are responsible for the reproduction of fixed capital. Many indicators that describe the workload of implements of labor are rated analytical indicators, and in essence are a consequence, rather than a function of the plan for production output. In addition to this, actual results obtained with significant unproductive losses of work time are used as the basis for calculating plan norms. These norms do not encourage labor collectives to make intensive use of production capital.

Lack of coordination in planning the reproduction and utilization of fixed production capital, and in planning for manpower and capital investments, is also accompanied by a clearly defined sectorial approach, with poor utilization of intersectorial and territorial reserves for intensification. No stimuli have been developed to increase the cost accounting interest in this matter. In summarizing the results of state plan fulfillment, the status of the equipment workload is in essence not taken into account. The lack of coordination is also evident in the fact that the reproduction of fixed capital (physical replacement of worn implements of labor, the creation of new work places, etc.) is not carried out together with organization of conditions for

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complete utilization of implements of labor that have just been put into operation, as well as of implements of labor that were acquired earlier. The rate of renewal and making qualitative improvements in the machinery pool is inadequate to free up personnel who are needed to serve newly created work places without increasing the total number of workers.

A result of this lack of coordination is a disparity between the number of work places and the number of personnel available. Statistics show that in the country's machine building industry alone there are 200,000 metalworking machine tools that are underutilized[3], and almost half of these are in large cities of over 1 million people. In Leningrad, for example, 10.6 percent of the metalworking equipment stands idle due to a shortage of machine operators; in Kiev, this figure is 9.1 percent; in Sverdlovsk and Odessa, it is 9.5 percent; in Novosibirsk, 10.4 percent; in Minsk, 3.4 percent; in Baku, 7.8 percent; in Alma-Ata, 16.7 percent; in Ashkhabad, 24.8 percent; and so on[4].

The disparity between the number of work places and manpower hinders normal functioning of the national economy and reduces the effectiveness of capital investments, new equipment, and fixed capital. Means of labor perform their active functions in increasing the effectiveness of national production, if they are combined with a work force that turns the equipment's potential possibilities into actual economy of labor. Here the character and type of utilization of means of labor depends on a qualitative improvement in the technical base of production and the degree to which production relations are developed. The intensive type of expanded reproduction, which overcomes the need for a transition to an intensive type of machinery and equipment utilization, is characteristic of developed socialism.

At the contemporary level an increase in the workload level of fixed production capital becomes not only an important source for increasing production volume and the national income, but also a necessary precondition for accelerating the rate of scientific and technical progress. There is a direct connection between scientific and technical progress and improvement in the utilization of implements of labor. Qualitative improvement in equipment and technology increases the total use value of fixed capital and it creates a material base for increasing the production output from each meter of production area and from each unit of equipment. But scientific and technical progress does not automatically lead to a greater yield from fixed capital. It only creates the potential opportunities for this kind of growth. This type of opportunity turns into an actual economic effect only when the national normal workload for implements of labor is met in terms of time and capacity. The faster the pace of scientific and technical progress, the better the utilization of implements of labor should be.

An analysis of the planned (estimated) and actual effectiveness of capital investments in the most important directions of scientific and technical progress in machine building and metalworking sectors in Leningrad in 1981 (table 1) showed that as a result of poor coordination between the available operating time and equipment productivity, taken into account in equipment planning, at their actual level in Leningrad machine building there is an annual shortfall in economic effect totalling 14.7 million rubles at mechanized and automated flow lines. Therefore, the pay-off period for capital

investments for mechanized flow lines was not 1.7 years, but 2.8 years; and for automatic lines, it was 4.6 years instead of 3 years[5].

The coordination of indicators for the utilization of implements of labor and indicators for other (leading) sections of the comprehensive plan for economic and social development represents the major emphasis of planning for fixed capital. This coordination should be aimed at providing full and efficient utilization of equipment, an increase in production and material services, primarily by making use of existing reserves, that is, by making use of capacities already in operation, without making any additional capital investments.

Table 1

| | | (1) Вид новой техники, линии | |
		(2) механизированные поточные	(3) автоматические
(4)	Продолжительность использования новой техники, ч.		
(5)	принимаемая при проектировании	4 350	4 350
(6)	фактическая	3 150	3 280
(7)	Использование потенциальных возможностей производительности техники, %	87,2	88,1
(8)	Недополучение экономического эффекта от недоиспользования техники, млн руб.:		
(9)	по времени	8,2	1,7
(10)	по производительности	3,9	0,9
(11)	Годовой экономический эффект от внедрения новой техники, млн руб.:		
(12)	расчетный	30,2	7,1
(13)	фактический	18,1	4,5
(14)	Срок окупаемости, год:		
(15)	расчетный	1,7	3,0
(16)	фактический	2,8	4,6
(17)	Коэффициент эффективности (эффект на 1 руб. затрат), коп.:		
(18)	расчетный	0,58	0,34
(19)	фактический	0,45	0,21

Key:

1. Type of new equipment, line
2. Mechanized flow lines
3. Automatic
4. Length of utilization of new equipment, hours
5. Used in planning
6. Actual
7. Utilization of potential possibilities for equipment productivity, percent
8. Shortfall in economic effect due to under-utilization of equipment, millions of rubles
9. In terms of time
10. In terms of productivity
11. Annual economic effect from introduction of new equipment, millions of rubles
12. Estimated
13. Actual
14. Pay-off period, years
15. Estimated
16. Actual
17. Efficiency coefficient (effect per ruble of cost), kopecks:
18. Estimated
19. Actual

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The most important indicator in this part of the plan is the machine shift coefficient (based on work places). The planned shift coefficient should reflect the quotas set for enterprises, sectors, and regions in organizing the workload for fixed production capital. The planning of the coefficient should be aimed at: achieving and then maintaining national normal (standardized) levels for the workload of implements of labor in various sections of the national economy; eliminating the lack of coordination that has developed between reproduction and utilization of fixed production capital, work places, and the available labor force (manpower resources), and the estimated (planned) and actual effectiveness of capital investments. The coefficient should also serve as a base value for evaluating additional requirements for capital investments and new equipment, equipment productivity, utilization of production areas, amortization deductions; the coefficient should be taken into account by planning and scientific research institutes that are involved in planning new equipment.

The planned level of the shift coefficient should be worked out on the basis of unified methodological and systematic approaches at various national economic levels; it should be determined at the same time as the planned production capacity, quotas for increasing the volume of industrial production, limits on the number of industrial production personnel, and measures to improve the operation of the production and social and personal services infrastructure at enterprises and in cities. The basis for the coefficient's planned value (as opposed to its normative value)[6] has a number of peculiar features. If the norms are the same for groups of equipment that are interchangeable in terms of separate spheres of employment, then the planned indicators are individual, since the structure of the machine tool pool at every enterprise is different. Another difference between normative indicators and planned indicators is that the latter are lower, since in an absolute majority of cases it is difficult to maintain the workload of the equipment at a maximum, i. e., normative, level as a result of an absence of the practical conditions necessary for this (proper supply of manpower, materials, unfinished work pieces, power, and so on; coordinating the structure of the equipment with the planned production assortment; and opportunities for planned repairs, modernization of equipment, and so forth).

To calculate the planned shift coefficient (K_c^{π}), we can use the following formula:

$$K_c^{\pi} = \frac{(\dfrac{Ч_6 П_n^{\text{u}}}{100} - Э_n^{\text{п}}) K_n}{P_{\text{м}}}.$$

where $Ч_6$ is the number of industrial-production personnel (workers with the corresponding skills) for filling specific work places in the base period;

$П_6^{\pi}$ is the growth in producion output for the planned period, in percent;

$Э_u^{\pi}$ is the reduction in the number of industrial-production personnel during the planned period that is the result of organizationsl and technical factors, in number of people;

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$K_{\text{я}}$ is the coefficient of the number of industrial-production personnel recruited (research shows that this value can be accepted as 0.87-0.90, which reflects the actual status of this indicator in industry);

P_{M} is the number of established work places for the production program, (P_{M} = YK$_{\text{o}}$/H$_{\text{o}}$), where Y is the number of established units of equipment; H$_{\text{o}}$ is the service norm for the implements of labor; K_{3} is the coefficient describing the part of the equipment that does not require the assignment of a worker for its operation.

Determination of the planned shift coefficient using this method does not violate the general methodological basis that substantiates this indicator, since by taking into account work places and the recruited number of workers it can be calculated not in man-shifts, but in machine-shifts.

Three basic factors influence the the size of the planned shift coefficient: the dynamics of changes in the number of industrial production personnel, the planned rate of growth in production output, and the number of fixed work places. A rise in the number of workers and in production volume increases the shift coefficient, while an increase in the number of work places reduces the coefficient. Consequently, the goal is to coordinate the activity by planned control over the reproduction of work places.

When evaluating the influence of technical and economic factors on the base number of industrial production personnel, one can apply a type classification that is used as a basis for plan quotas for increases in labor productivity; that is, an evaluation of the possible economy in the number of workers by: raising the technical level of production, improving the organization of production and labor, changing the volume and structure of production; and so on. Here the most complicated task is determining the reserves for economy in numbers by improving the organization of production and labor, in particular reducing the unregulated intra-shift and shift-long idle time of work places. In planning practice, there is no methodological basis for substantiations of this nature. Another complication is a shortage of information on the causes of this idle time. At the same time, statistics agencies have a considerable amount of information at their disposal on the utilization of fixed production capital and manpower, as well as on their reserves; this information was obtained as a result of one-time surveys conducted using the I-TP(mash) [expansion unknown] form and its supplement, which can serve as primary material for calculating the planned shift coefficient.

Quantitative economy of manpower by reducing intra-shift and shift-long equipment idle time can be calculated according to the following formula:

$$\Theta_\text{ч} = \frac{B_\text{п}{}^\text{б} - B_\text{п}{}^\text{п}}{100 - B_\text{п}{}^\text{п}}\, q_\text{в} + \frac{Ц_\text{п}{}^\text{б} - Ц_\text{п}{}^\text{п}}{100 - Ц_\text{п}{}^\text{п}}\, q_\text{ц} \,.$$

where $Ч_\text{в}$ and $Ч_\text{ц}$ represent the number of workers working on the type of equipment for which intra-shift and shift-long idle time has been determined;

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B_π^6 and B_π^π represent the ratio between the length of intra-shift equipment idle time in the base and planned periods, respectively, and the scheduled time for utilization of the equipment, in percent

$$(B_\pi^{6(\pi)} = \frac{t_{e\,n}^{6(\pi)}}{T_p^\Phi} \cdot 100);$$

$\mathcal{U}_\pi^6$ and $\mathcal{U}_\pi^\pi$ represent the ratio between the length of shift-long equipment idle time in the base and planned periods, respectively, and the normative effective equipment operation time, in percent

$$(\mathcal{U}_\pi^{6(\pi)} = \frac{t_{u\,n}^{6(\pi)}}{T_3^\pi} \cdot 100).$$

In these two formulas, $t_{e\,\pi}^{6(\pi)}$ is the actual (planned) intra-shift idle time per day for the given group of equipment, in machine-hours;

T^Φ is the scheduled time for utilization of equipment over the course of a 24-hour period, in machine-hours $T_p^\Phi = YRt_c);$

$t_{u\,u}^{6(\pi)}$ represents the actual (planned) shift-long idle time per day (to convert the lost machine shifts to machine-hours, the number of machine shifts is multiplied by the number of hours the equipment operates per shift), in machine-hours;

T_3^H is the normative effective time for utilization of equipment, established for the corresponding types of equipment, according to which the shift-long idle time is determined, in machine-hours ($T^H = Y K_{cm}^H t_c$);

Y is the quantity of fixed equipment according to which the intra-shift and shift-long idle time is determined, in units;

R is the fixed schedule for the operation of equipment (with a two-shift schedule R=2, with a three-shift schedule, R=3);

t_c is the amount of time the equipment operates per shift, in hours (8 hrs);

K_{cm}^H is the normative shift coefficient.

The development of measures to reduce intra-shift and shift-long equipment idle time should include a set of measures for improving the organization of production and labor, which will help eliminate idle time that is due to equipment being in disrepair; unscheduled repairs; the absence of raw materials, supplies, unfinished work pieces, instruments, electrical and thermal power, materials handling equipment, technical specifications, a production assignment; failure to reduce violations of labor discipline; and so on.

Furthermore, when establishing a planned shift coefficient, one determines the proportion of equipment to which no worker is assigned. This can be calculated by summmarizing statistical reporting data from the I-TP(mash) form obtained over a long period of time. The levels of this indicator are differentiated for different enterprises and sectors. At the same time, the base values in each sector can be extended to the next planning period, since the proportion

of this equipment (like the shift coefficient) does not change significantly over a long period of time.

Calculations made using statistical reporting materials on the utilization of metalworking equipment at Leningrad enterprises between 1975 and 1982 showed that the proportion of equipment to which no worker need be assigned in heavy, power, and transport machine building is 4.5 percent of the machinery pool; in electrical engineering it is 5.4 percent; in instrument building it is 4.2 percent; in the machine tool industry and tool building it is 6 percent; in chemical and petrochemical machine building it is 6.4 percent; in machine building for light and food industry it is 3.9 percent; in construction, road, and municipal machine building it is 4.5 percent; in tractor and agricultural machine building it is 1.2 percent; and in all these sectors taken together it is 4.5 percent.

Table 2*

Показатель (1)	(2) Год планового периода				
	1981	1982	1983	1984	1985
(3) Экономия численности работников за счет организационно-технических мероприятий (Э₄). чел.	45	55	55	65	67
(4) В том числе по факторам повышение технического уровня производства (Э₁)	30	32	32	40	41
(5) улучшение организации производства и труда (Э₂)	15	23	23	25	26
(6) Рост объема выпуска продукции (П₆"). %	108.3	110.9	110.9	113.1	113.6
(7) Количество установленных рабочих мест на производственную программу (Р₄). ед.	423	338	325	317	310
(8) Плановый коэффициент сменности использования рабочих мест (Кс")	1,15	1,45	1,51	1,57	1,61

*The base number (Ч₆) of workers in machine tool trades for each year of the planning period is 560; the coefficient of recruited industrial-production personnel (Кᵣ) for all the years of the planning period is 0.87.

Key:

1. Indicator
2. Year of the planning period
3. Savings in the number of workers as as result of organizational and technical measures (Э₄), people
4. As a result of increasing the technical level of production (Э₁)
5. As a result of improving the organization of labor and production (Э₂)

6. Increase in the volume of production, (π_6"), percent
7. Number of fixed work places for the production program (P_M), units
8. Planned shift coefficient for utilization of work places (K_c^{π})

Table 2 presents the calculation of a planned shift coefficient for utilization of work places (for a pool of metal-cutting machine tools), taking into account

the influence of the set of factors determining the coefficient; the data are from a machine building enterprise in Leningrad.

A definite investment policy is required in order for the planned levels of the shift coefficient to be met by workers with the proper skills. When the opportunities for attracting additional manpower resources have been practically exhausted and the entire increase in production is accomplished without increasing the number of personnel, the problem of balancing work places and the labor force must be resolved first of all in the sphere of reproduction of means of labor. In the process of reproducing work places it is important to strive for the total number of workers freed up as a result of introducing achievements of scientific and technical progress and implementation of organizational and technical measures at every enterprise, to be sufficient to service the existing and new capacities with the prescribed planned shift coefficient. The calculations that were made using the operation of Leningrad industrial enterprises as an example show that it is possible to achieve a balance of manpower resources and work places with an average annual rise in the shift coefficient of 2-3 percent, if 4.8 percent of the machinery pool is replaced annually in the 11th Five-Year Plan and 5.5 percent is replaced annually in the 12th Five-Year Plan. The total increase in work places should not exceed 1.2-1.5 percent. This is the only way that the industrial-production potential that is being freed up at enterprises will be able to meet the additional demand for workers without increasing their total number.

The experience of the Leningrad enterprises confirms that a specific direction of work is still very important in order to increase the shift coefficient in machine building; this direction involves converting part of the highly productive groups of equipment operating in the same shift to a two-shift system, thereby freeing up ineffective, obsolete (economically) work places.

The withdrawal of old equipment is especially important in the reconstruction of the industrial production system in large cities, since for a number of reasons indicators of the age of equipment and the capital-labor ratio in large cities are significantly worse than the average indicators for the sector and the country as a whole. About 15-17 percent of the equipment in the industry throughout the country is over 20 years old, while in Leningrad, Kiev, and a number of other large cities, 22-27 percent of the equipment is this old. Utilization of outdated equipment leads to a decline in labor productivity. For example, the productivity of metal-cutting machine tools that are over 20 years old is 25-30 percent lower than that of new machine tools of the same type; and the number of times they must be repaired exceeds the norms by a factor of 2-3.

Freeing up superfluous work places does not mean that there will be a decline in enterprises' production capacities. This economic maneuver creates conditions for stepping up the pace of economic growth, and it makes it possible to increase labor productivity and to resolve many social problems of labor collectives. For example, at the "Escalator" Association, which initiated this method for increasinng the shift coefficient, 130 units of obsolete equipment were withdrawn; and machine tool operators who had previously been working on worn-out machine tools during the same shift, were

switched to a two-shift schedule for operating the same type of contemporary equipment. Thanks to this change, the shift coefficient rose from 0.94 to 1.5; the output of machine tool operators increased by 10.2 percent; 800 square meters of production space were freed up; 10,000 rubles were saved by reducing the amount of defective production; and expenditures on equipment repair services dropped by 25,000 rubles. This method was applied at the "Elektrosila" [Electrical Power] Association imeni S. M. Kirov (300 units of obsolete equipment were withdrawn) and the shift coefficient increased by 13 percent; 1200 square meters of production area were freed up; and the machine tool operators' labor productivity increased by 15 percent.

Redistribution of equipment that has been withdrawn is an important additional resource for meeting the demands of enterprises and consruction projects for various implements of labor. This will help reduce capital investments and the demand for new equipment. For example, during the 10th Five-Year Plan only one-third of the 32,000 machine tools withdrawn in Leningrad industry were scrapped. Most of them were sent to other sectors of the national economy, and mainly to ancillary subsectors of sectors not engaged in machine building, where the demands for equipment with high performance standards are not so stringent (including agriculture, repair shops, garages, and so on).

It is also expedient to establish in the annual and five-year plans a normative and planned shift coefficient for utilization of work places. Methodological recommendations for determining these indicators have been worked out by scientists in Leningrad[8]. The indicators have been tested at industrial enterprises and they are now reflected in comprehensive plans for the economic and social development of regions and cities, and they are taken into account when the results of socialist competition are being summarized. Sectorial and territorial peculiarities regarding distribution of productive forces, enterprises' operating schedules, and the structure of the fixed equipment have an effect on regional differentiation of normative and plan indicators of the shift coefficient. The more enterprises or equipment there are in a given region with a two-shift or three-shift schedule, the higher the average normative or planned value of the shift coefficient.

When planning regional indicators of the shift coefficient, territorial planning agencies, together with sectorial planning agencies, should outline a set of measures for implementing intersectorial and interregional reserves for utilization of work places. In recent years, there has been improved coordination and strengthening of ties for exchange of production and special services among enterprises in the same sector. However, in organizing utilization of fixed capital, ties of this type among enterprises under different ministries and departments located in the same city or region are developing slowly. Meanwhile, under conditions of the rising pace of scientific and technical progress, it is becoming more and more difficult for each enterprise individually to provide full, uniform workloads for its fixed capital. This can be explained by an increase in the proportion and volume of operations to introduce new types of products and the frequent introduction of new equipment, which creates certain disparities in the workload of the machinery pool. Some enterprises that are located in cities regularly have temporary reserve capacities (capacities for general technical purposes should be taken into account first and foremost), although other enterprises have an

acute shortage of such capacities.   The primary means for eliminating this
disparity is the organization of territorial production capacity cooperatives.

Table 3 contains calculations of reserves of intersectorial cooperative
production capacities based on the example of several sectors of Leningrad
industry in 1982.   From the data presented in the table, it follows that the
machine tool pool in some sectors is under-utilized, while in others it limits
fulfillment of the production program.   For example, the available equipment
pool in heavy and transport machine building has a bottleneck in the area of
horizontal boring machines, and the workload exceeds the norm; there is an
annual shortage of equipment operating time of 22,700 machine-hours.   At
enterprises of power machine building, however, the sectorial production
program cannot provide a full workload for this group of machine tools; the
result of this is that the reserve of available equipment operating time was
29,300 machine-hours.   At enterprises of chemical and petrochemical machine
building this reserve was 200 machine-hours.

Table 3
(in thousands of machine-hours)

Отрасль (1)	Фонд времени загрузки оборудования (2)					
	зубообрабатывающие станки (3)			горизонтально-расточные станки (4)		
	нормативный (5)	фактический (6)	резерв (+), дефицит (−) (7)	нормативный (5)	фактический (6)	резерв (+), дефицит (−) (7)
(8) Машиностроение:						
(9) тяжелое и транспортное	1270,2	1282,2	−12,0	142,3	165,0	−22,7
(10) энергетическое	120,5	132,2	−11,7	243,2	213,9	+29,3
(11) химическое и нефтехимическое	35,8	30,5	+5,3	3,8	3,6	+0,2
(12) станкостроительное и инструментальное	311,0	215,3	+95,7	26,2	25,0	+1,2
(13) Приборостроение	911,6	592,9	+318,7	—	—	—
(14) Всего	2 649,1	2 253,1	+396,0	415,6	407,5	+8,0

Key:

1. Sector
2. Available equipment workload time
3. Cog-cutting machine tools
4. Horizontal boring machine tools
5. Normative
6. Actual
7. Reserve (+), shortage (-)

8. Machine building
9. Heavy and transport
10. Power
11. Chemical and petrochemical
12. Machine tool and tool industry
13. Instrument building
14. Total

It would be best to formulate a production program based on regional production
capacities, that is, the total amount of equipment available at the city's
enterprises in different sectors, in order to combine departmental and
territorial interests more fully.   A regional limit should also be set for the
number of industrial-production personnel.   Calculations show that the
organization of intersectorial cooperative production capacities in Leningrad
makes it possible, without additional capital investments, to increase the

production output in machine building by 4-5 percent, to increase the shift coefficient by 6-8 percent, and to reduce substantially the demand of the city's enterprises for additional equipment and additional production area.

Planning commissions of soviet executive committees should have at their disposal information obtained from the city's enterprises and organizations on the status of reproduction and utilization of work places, to be included in the regional indicator of the shift coefficient of reserves from intersectorial cooperation; there should be data on the workload of work places for fulfilling the production program (in norm-hours), the industrial condition and age of the work places, how well they are staffed with the appropriate labor force, the relationship between the equipment workload and the estimated production capacities, and so on.

Actual, planned, and normative indicators of the shift coefficient, the effective available equipment operating time, and equipment productivity can be used as a comparative base for establishing reserves of intersectorial cooperative production capacities. Data on the correspondence between work places at enterprises in the region and the plan, during their reconstruction, technical retooling, and during the period under review, can also serve as a comparative base for analysis and development of measures for organizing intersectorial cooperatives.

Making improvements in regional planning of fixed capital requires that the organizational structure of management be improved as well. With the aim of providing the necessary, practical coordination among the activities of sectorial and territorial agencies for combined planning of reproduction and utilization of fixed capital, and to reveal intersectorial and territorial reserves, in our opinion it would be expedient to create the corresponding subdivisions (under soviet executive committees' planning commissions) in the country's major industrial centers; they would help to include reserves from territorial integration in this sphere of economic activity in sectorial state annual and five-year plans.

In connection with the development of long-range social and economic planning in the country, another direction of economic activity is gaining exceptional importance--forecasting indicators of the utilization of fixed production capital. Currently, these indicators are not determined when forecasts are made and comprehensive plans are developed. Experience shows that in the near future and in the distant future, a clearly defined trend toward increasing the shift coefficient for equipment utilization will have a greater and greater effect; for this reason the question of the shift operation of equipment was raised in such a fundamental way at the December (1983) Plenum of the CPSU Central Committee. This process is objective, since the factors that necessitate multi-shift operation are brought on by natural principles governing scientific and technical progress: reduction in the service life of equipment and accelerated obsolescence. Immense, ever-growing outlays on research and development lead to the appearance of expensive automatic and mechanized lines, electronic equipment, machine tools with programmed control, robot-manipulators, and so forth. At the same time a demand is created not only for further increases in the time that highly productive equipment is utilized, but also the need for coordination of predicted shift coefficient

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indicators with long-range planning of production capacities, manpower resources, and other parts of the comprehensive plan.

One cannot overlook the important natural principle that on the one hand, scientific and technical progress demands an increase in the machine shift coefficient, and on the other hand, the introduction of highly automated equipment leads to a decrease in the number of workers needed to operate the equipment; that is, it creates the conditions for an absolute reduction in the number of shift workers and a decrease in the shift coefficient that is based on workers. Data from a survey of Leningrad enterprises confirm this principle. For example, as a result of an increase between 1975 and 1982 in the proportion of automatic equipment in the total inventory of metalworking equipment, the shift coefficient based on workers in machine building decreased from 1.24 to 1.18 (for basic production), and the machine shift coefficient rose from 1.30 to 1.50. The number of workers with special machine tool operating skills (with an increase in the total number of work places) remained practically at the same level as in 1975, and the proportion of workers operating several machines simultaneously increased by 12 percent. Consequently, this trend should be viewed as a source for freeing up the labor force and a factor in increasing labor productivity and raising the machine shift coefficient.

Improving the theory and practice of sectorial and regional planning for utilization of production potential is the most important direction in seeking out additional new reserves for intensification of production, accelerating scientific and technical progress, and for the over-all reorganization of the economic mechanism.

FOOTNOTES

1. "Materialy Plenuma Tsentral'nogo Komiteta KPSS, 26-27 Dekabrya 1983 goda" [Materials on the Plenum of the CPSU Central Committee, 26-27 December 1983], Moscow, Politizdat, 1983, p 14.

2. "Materialy XXVI S'yezda KPSS", [Materials on the 26th CPSU Congress], Moscow, Politizdat, 1981, p 110.

3. "Machine Tool Vacancies", PRAVDA, 16 June 1981.

4. "Effektivnost' Ispol'zovaniya Osnovnykh Fondov i Kapital'nykh Vlozheniy v Regional'nom Aspekte", [The Efficiency of Regional Utilization of Fixed Capital and Capital Investments], Moscow, Economics Institute of the USSR Academy of Sciences, 1979, p 51.

5. "Otraslevyye i Territorial'nyye Faktory Povysheniya Effektivnosti Proizvodstva" [Sectorial and Territorial Factors in Increasing Production Efficiency], "Nauka", 1981, p 47.

6. Cf. "On Methods for Setting Norms for Indicators of the Utilization of Fixed Capital", PLANOVOYE KHOZYAYSTVO, No 2, 1978.

7. A work place is understood to be a sphere of employment in national
    production that requires, in accordance with a fixed norm, equipment
    service and an operating schedule by a worker with the appropriate
    skills and training for producing goods (or a certain type of operations),
    with a fixed level of quality and planned productivity or economic
    effect.

8. Cf. "Planning and Norm Setting of Indicators for the Utilization of
    Equipment at Various National Economic Levels (for Machine Building
    Enterprises and Territorial Planning Agencies)", Leningrad; in the section
    "Economic Methods of Production Management", the Economic and Social
    Development Council under the Leningrad Oblast Party Committee, the Social
    and Economic Problems Institute of the USSR Academy of Sciences, 1978.

IMPROVEMENT OF WAGE RATE SYSTEM SOUGHT

Workers'Wage Worries Discussed

Moscow TRUD in Russian 2 Dec 83 p 2

[Article by Doctor of Economic Sciences L. E. Kunel'skiy: "New Facets of Wages"]

[Text]   No one is surprised that one person can jump five meters, while another can jump only two. People have different capabilities. It is the same at work. I, for example, and some of my comrades at the mine are able to produce one and one-half of the norm. Although for most people the norm is the limit. But there is no stimulus to overfulfill the norms. If you have produced more, right away the norm setter cuts back the rates. People work differently, but for some reason an effort is always made to equalize their wages. It is vexing.

V. Goryutskiy driller

Nikopol'

Control over the measure of labor and the measure of consumption, the correspondence between wages and labor contribution, and the struggle against leveling—these topics are touched upon in many of the letters which come into the editorial offices. Of the many letters we have selected one—by no means an uncontroversial one—in order to begin the discussion with it.

The problem touched upon in Goryutskiy's letter really does exist. Although I would not reduce the entire matter here solely to economic categories. For the conscientious worker such concepts as duty, conscience, and honor are very important. And if a person is faithful to his duty, he will not work at half his capacity. The author of the letter himself says that this is vexing. But, of course, economic stimuli cannot be underestimated.

An important role is played here by norms. If almost everyone at an enterprise overfulfills the norms, there can only be one conclusion: the norms have become obsolete and unsuitable. But supposing record output is demonstrated only by some, for example, especially gifted workers—what does one do in this case? Today the norm setters have "held back" the pay of advanced workers, and tomorrow, seeing this prospect, their possible followers

will hold back the reserves. Such situations are encountered frequently. What is to be done? You cannot set a controller over every norm setter, can you? But, on the other hand, the norm setter can also be understood—after all, the wage fund is not made of rubber, and where is the money to be gotten? The way out is seen in making use of stable economic normatives which are supposed to establish a clear dependence between final production results and the wage fund. For example, so many kopecks of wages per ruble of output. If the work indicators have improved, this means that at the same time the fund has to be increased. That is the scheme. And then the problem will be solved.

In addition, it has to be considered that the share of the labor expenditures of workers for the production of output decreases with time. This means that, correspondingly, the wage normatives per ruble of output have to be established differentially for every year in decreasing amounts. Approximately as follows. In the first year an enterprise allots the wage fund 23 kopecks per ruble of output, in the second year—22, and in the third—21 kopecks.

Thus, with normative planning of funds for the payment of labor the objective preconditions are created for guaranteeing an enterprise an increase in the wage fund when there is an improvement of work indicators. Let us assume that during the first quarter a plant has produced 1,000 of some kind of products. Let us also say that the wage fund came to 90,000 rubles. If during the second quarter, with the same plan, the pace of work has picked up and 1,020 products are produced, the wage fund will increase to 91,800 rubles. If, however, the production of output decreases, then the wage fund will also decrease proportionately. And, correspondingly, a lathe hand, a mechanic, and a driller will get money that is exactly in accord with their labor contribution.

The effectiveness of the normative method depends above all upon the validity and stability of the normatives. It should be noted here that in five industrial ministries in which on 1 January a wide-scale experiment to expand the rights of enterprises will begin the economic normatives will not change, even if the objective conditions for a correction of production assignments arise.

Recently, as is known, the correlation between an increase in labor productivity and an increase in wages was violated in a number of branches. Many letters are in one way or another connected with this problem.

Yes, unfortunately at many enterprises and associations, and, above all, in metallurgy, in the coal and light industries, and in construction there were unfavorable correlations in past years. Frequently, plans were corrected at the end of the year, but the wage fund nevertheless remained unchanged or even increased. This practice engendered undesirable distortions. Wages increased, monetary income increased, but the growth rates of the commodity mass lagged behind their planned level. And, naturally, this brought about a shortage of a number of goods with all of its abnormal consequences.

In 1983, thanks to a large amount of work to strengthen order and organization in the sphere of production and to tighten up discipline, there was a major acceleration of labor productivity growth rates in the basic production branches. According to the results of 10 months of 1983 in industry as a whole and in most ministries, the increase in labor productivity outstripped the increase in wages, and the correlation between the indicators corresponded to the estimated one.

However, the readers cite facts like these. In order to maintain this correlation, they write, at certain plants, for example, bonuses are not paid for economizing material resources. Overall wages decrease, and the correlation between an increase in labor productivity and wages improves. But, at the same time, very important stimuli are undermined....

There is no question that this is incorrect. Here is what I want to say here. Beginning with the new year not only assignments for an increase in labor productivity will be established in industry, but, along with them, planned normative correlations between an increase in labor productivity and in wages. I will explain. Let us assume that labor productivity at a plant has risen by 3 points; then, correspondingly, wages are increased by 1.5 points. The meaning of this is for the enterprise, association, and, finally, branch itself to earn for itself funds for increasing wages.

But the directors of enterprises know very well that labor productivity can be increased very simply: by changing the products list of the products which are produced. Remove, for example, cheaper goods, and put expensive ones in production. Is this not exactly what will be done at plants in pursuit of a big wage fund?

I am confident that it will not be. If only because the normatives are being established in a differentiated manner depending upon the specific nature of the enterprise producing the output, and so forth.

Then there is another question. Let us assume that the planning assignments for an increase in labor productivity turn out to be unfulfilled at some enterprise, and, nevertheless, bypassing the established rules, the enterprise has found some ways for increasing wages. What then?

In that case, the correlation between an increase in wages and an increase in labor productivity will be violated. It will be restored automatically on the basis of decreasing payments from the material incentives funds. When the plan is not met a part of it will be frozen by the bank, not transferred to the enterprise, and will remain in reserve. If for the year as a whole the correlation proves to be normal, these funds are returned.

Will an enterprise be able, in accordance with the new conditions, to independently reduce the size of its personnel and thereby increase the wages of those left working? Are there any restrictions here?

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There are no restrictions. In the new situation work with a smaller number of people is in every way encouraged. It has been provided that an economy of the wage fund which is obtained as a result of an unplanned decrease in personnel will not be counted in determining the actual correlations between an increase in labor productivity and in wages. Nor will consideration be taken of bonuses for the production of the highest quality category output and the production of high quality consumer goods. Bonuses for economizing material resources are not being taken into account either. In other words, an enterprise may use all of its reserves without fearing that this will worsen the correlation between an increase in wages and in labor productivity. In this way, the Shchekino method finds, as it were, its further development.

Incidentally, today also enterprises and organizations have extensive possibilities for encouraging occupational doubling up on the basis of pay additions from an economy in the wage fund. Unfortunately, these rights are not always made use of. At many enterprises the number of workers who are able to work at two or three specialties comes to 30-60 percent. Yet, only five-seven percent actually perform occupational doubling up. This is where there is a substantial reserve for increasing labor productivity and, of course, wages.

Many letters are connected with the problem of wage rate reviews. Today this is done in a centralized manner--once every 5-10 years. Suggestions are received that enterprises themselves seek funds for increasing wages and salaries, and not wait until the state allocates them money. And then the rate reviews could occur more frequently. What can you say about this?

The introduction of new wages and salaries really has to be connected with the specific labor achievements of each collective. Toward this end, especial attention has to be called toward the search for internal resources by enterprises and branches themselves. These resources are known: an improvement of the structure of wages on the basis of the mass review of obsolete norms, the elimination of unjustified payments, the release, on the basis of mechanization, of some personnel, especially auxiliary workers which comprise 40-50 percent of the total, and moving them to more productive operations.

On the whole, as it seems to me, the introduction of new wages and salaries could be carried out within a definite established time on a branch or regional scale as funds for this are accumulated.

The suggestions on a new procedure for reviewing wage rates are interesting and deserve the most careful attention. They are in need of the most rapid testing in practice. A new system would make it possible to substantially improve the organization of wages and norm setting for labor. Finally, it could promote a more frequent review of wages and salaries within the limits of enterprises' wage funds which are established in accordance with normatives.

Comprehensive System Improvement Needed

Kiev EKONOMIKA SOVETSKOY UKRAINY in Russian No 10, Oct 83 pp 78-81

[Article by V. Minenko and A. Bocharnikov, candidates in economic sciences, and V. Beletskiy:" Improvement of the Wage Rate System of Labor Payment"]

[Text] The decisions of the 26th CPSU Congress provide for a further "improvement of the system of material incentives, taking account of the specific contribution of each labor collective and individual worker to achieved results." Wages with its rates and skills system of the payment of labor is a highly important means of stimulating individual and collective labor. In a socialist economy the wage rate system of the payment of labor is the basis of the state regulation of wages. With its help an evaluation is made of the individual capabilities of each laborer and of his contribution to the results of collective labor, and correlations in the payment of specific types of work are established. One of the chief directions of improving the wage rate system is an increase in its effectiveness and the creation of the preconditions for the introduction of a unified system of the payment of the labor of all categories of workers. It is essential to substantially increase the role of wage rates as the chief element of this system.

Studies which have been conducted at a number of ferrous metallurgy enterprises have shown that as a result of an increase in the amounts of bonuses paid to workers for basic production indicators and of the introduction of various pay additions to basic wages, there is occurring a decrease in the stimulating role of wage rates. The share of the wage rate in the average wages of piece workers at these enterprises comes to 54.5-66.2 percent, and of time workers to 61.6-78.8 percent. The necessity has arisen for a substantial increase in the share of the wage rate in the total earnings of workers. When measures are worked out to further improve the organization of labor wage rates should be given especial attention. They have to take fuller account of the difficulty of labor, and stimulate workers to improve their skills, increase labor productivity, and improve the quality of work.

At the present time, under the influence of scientific and technological progress, there is occurring in industry a continuous improvement of production processes and of workers' working conditions. However, the wage rates of workers in ferrous metallurgy enterprises and of workers in other productions with hard and harmful working conditions are in effect for five years and more. For this reason, the adopted differentiation of these wage rates does not always take account of specific changes in working conditions. In addition, under the wage rate conditions in effect pay additions for working conditions are contained directly in the wage rates. Workers who are employed in the very same production with equal working conditions but who have different skill categories receive (in absolute terms) different pay additions to compensate for harmful working conditions.

Pay additions for working conditions increase from category to category in accordance with the growth of inter-category coefficients (the correlation between the wage rate of each category and the wage rate of the first category). With an increase in his qualifications (skills), together with the increased wage rate which is established for him, the worker acquires the right to obtain increased monetary compensation for harmful working conditions, although the latter in this case have not changed. We believe that pay additions for harmful conditions should be established in the same amounts for all workers employed in the very same production with equal working conditions, regardless of their occupations and the categories acquired by them.

In order to have a fuller and more up-to-date account of the changes in workers' working conditions and to establish correct correlations in their pay, pay additions for working conditions have to be excluded from wage rates. Compensation for harmful working conditions should be instituted in the form of fixed pay additions over and above basic wages. The absolute amount of these pay additions should be established on the basis of definite criteria for evaluating working conditions at each specific production sector or work place. In addition, it would be advisable to make a broader differentiation of working conditions for their individual elements (large amount of physical labor, stress, dustiness, high gas content, the influence of high temperatures, intensity, monotony, unattractiveness, and so forth) and, correspondingly, establish a broader range of pay additions. With this there will be a substantial increase in the stimulating significance of wage rates which, in their turn, will perform their direct functions--to take account of the inter-branch differentiation in the payment of labor and be the basic normative magnitude which determines the amounts of the payment of the labor of all categories of workers. This kind of approach to the organization of the payment of labor will increase the flexibility of the wage rate system and make possible the extensive introduction of technically substantiated normatives for labor expenditures and for the number of workers.

The solution of individual problems of improving the organization of the payment of labor will not yield sufficiently effective final results. It is necessary to carry out a comprehensive improvement of the wage rate system as a whole--to develop and institute unified wage rate scales for workers and unified payment of labor conditions for engineering and technical workers and employees on an economy-wide scale. It is possible to construct unified wage rate conditions for the payment of labor with a differentiation of wage rate levels by groups of branches.

All of the elements of the new rates and skill system should materially stimulate an increase in the skill level of workers and should make worker cadres, especially young workers, permanent at their jobs and promote an increase in labor productivity and an improvement of the quality of work. A unified rate and skills scale for the payment of the labor of workers employed at jobs with normal working conditions has to become the basis of the new wage rate system. The wage rate and skills scale which is being

planned takes account of the entire labor activity of a worker at a given enterprise.

The wage rate scales presently being used in industry represent a practical means of differentiating the payment of the labor of workers depending upon their skills and the skill levels of the jobs performed by them. The differentiation of wage rates by skills is achieved by means of changing the correlation between the rates of the top and bottom categories and simultaneously increasing or decreasing the inter-category difference, or by changing the number of categories. Since the introduction in 1973-1975 of new conditions of the payment of labor a six-category wage scale has been used in industry with a correlation between the rates of the top and bottom categories of 1:1.71, and for the leading occupations of the basic shops of ferrous metallurgy an eight-category wage scale has been used with a correlation of 1:2.1. The average inter-category difference of these scales comes to 11.4 percent.

At the present stage of the development of production the correlations between the wage rates of the top and bottom categories, inter-category correlations, and the number of categories in the wage scales ensure the financial interest of workers in increasing their skills and the necessary differentiation by the difficulty of labor for the setting of rates for different types of jobs. These correlations can be retained when the new rates and skills scale is constructed; but, at the same time, wage rates must not take account of pay additions for working conditions. The wage rates of the new rates and skills scale, as we believe, should also be differentiated within the boundaries of a single category depending upon continuous seniority of a worker at an enterprise. We propose the following approximate scheme for constructing a wage rate scale (with monthly wage rates calculated in rubles).

(1)	(2)	(3)					
		(4)	(5)	(6)	(7)	(8)	(9)
		(10)					

Key:
1. Wage rate categories
2. Monthly wage rates in effect for the payment of the labor of workers with normal working conditions.

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3. Seniority groups, years.
4. Up to 1 year.
5. From 1 to 3.
6. From 3 to 7.
7. From 7 to 12.
8. From 12 to 18.
9. From 18 to 25.
10. Wage rate coefficients.

The differentiation of wage rates by seniority groups within the same skill category is a result of the necessity for financially stimulating the permanency of worker cadres at their jobs, something which is especially important for ferrous metallurgy where labor turnover is quite high.

A strengthening of material stimuli will be one of the most important means in carrying out the measures to make worker cadres permanent. The functions of material stimulation have to be performed by all of the elements of the organization of wages, including the rates and skill system with the planned wage rates scale.

In the new wage rate scale it would be useful to make the level of differentiated wage rates within one and the same skill category directly dependent upon continuous seniority at an enterprise. The amount of these wage rates is determined as the product of the nominal wage rate for each category multiplied by the established coefficient of the corresponding seniority group. The separation between seniority groups has to be narrower in the beginning of labor activity, since labor turnover during this period is especially high, and substantially wider during the subsequent period.

(1)	(2)	(3) Действующие условия			(7) Проектируемые условия		
		(4) тарифная плата с учетом нормальных условий труда	(5) оплата с учетом труда	(6) всего	(8) тарифная плата с учетом нормальных условий труда	(9) оплата за условия труда	(10)
I	не 1 года	77.38	19.04	96.42	77.38	-25	102.38
I	V	77.38	19.04	96.42	92.86	-25	111.86
VI	от 1 года	132.77	32.54	165.31	132.77	-25	157.77
VI	5	132.77	32.54	165.31	159.32	-25	184.32

Key:
1. Category
2. Work seniority, years.
3. Conditions in effect.
4. Wage rates with normal working conditions.
5. Pay additions for working conditions.

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6. Total.
7. Planned conditions.
8. Wage rates including coefficient for work seniority.
9. Pay additions for working conditions.
10. Total.

The magnitude of the coefficient for each seniority group is determined with regard to the present statutes on financial stimulation for seniority and for continuous work at an enterprise. These coefficients should also take account of the average labor turnover of workers in a branch and create a sufficient financial interest to reduce it.

An increased coefficient should not be established for the first seniority group with work at an enterprise of up to one year; it should be taken as equal to one. Continuous work seniority which gives a worker the right to increased wage rates should also take account of studies in a vocational and technical school, service in the Soviet Army, work in elective offices, and transfer from another enterprise by decision of government, party, trade union, and Komsomol bodies. When a worker goes to another enterprise at his own initiative the right to the establishment of increased payment is not preserved. The establishment of increased wage rates within a single skill category should be performed with regard to the personal labor and social activity of each worker.

We are citing (Table 2) a comparative calculation of the basic wages (in rubles) of workers with different skills and with different work seniority at an enterprise who are employed at jobs with especially hard and especially harmful working conditions. In our projected conditions we take the pay addition for working conditions as 25 rubles on the basis of the amount of pay additions for the average category in the six-category wage rate scale in effect.

The amount of the basic wages of workers with top skills is made directly dependent upon work seniority at a single enterprise. The greater the work seniority, the higher the level of basic wages. At the same time, when a worker moves to another enterprise at his own initiative the level of basic wages is reduced, since he loses the right to receive part of his basic wages within the limits stipulated by our projected wage rates scale.

The brigade forms of the organization of labor should serve as the basis for the successful introduction and functioning of this system. Comprehensive production brigades unite the labor of workers throughout the entire techno-logical cycle. These brigades can include workers from a number of occupations whose labor is directed at the attainment of a single final result. Organizational changes in the labor of workers with a simultaneous introduction of a unified rates and skills system will create the preconditions for the wide introduction of the time rate form of the payment of labor and will promote an increase in labor productivity.

LABOR

FARM LABOR PRODUCTIVITY MEASURING METHODS EXPLORED

[Article by I. Tovma, candidate of economic sciences, and I. Kositsa, candidate of agricultural sciences (Poltava): "Methodological Questions in Measuring Labor Productivity in Agriculture"; article is presented as a discussion point]

[Text] Labor productivity became the subject of extensive scientific investigation comparatively long ago, and this is explained by the great importance of this economic category--an importance that was repeatedly emphasized by the founders of Marxism-Leninism. At the present time, however, a whole range of questions associated with determining the level of labor productivity have not yet been resolved. The reason for this situation is the extraordinary complexity of measuring production costs and results--a key problem in economic science and management practice. Stressing its acute nature, the well-known Soviet economist V.V. Novozhilov has pointed out that "use of incorrect methods in measuring costs and results orients management activity on extra expenses, on the race for minimum results, gives rise to contradictions between cost accounting and the plan and between the interests of the enterprise and the interests of the national economy, hampers distribution by labor, and puts obstacles in the path of the democratization of national economic management and the development of the creative initiative of the working masses."[*]

Scientific substantiation in methodology for determining labor productivity indicators and calculating their real level is of great importance for evaluating the results of economic activity at kolkhozes and sovkhozes and for studying the dynamics of productivity and wages, and when investigating potential reserves for the more rational utilization of production resources and improving efficiency in agricultural production.

As is known, labor productivity is determined by the amount of output obtained per unit of work time. In practice, however, it is often measured by the time spent to produce one unit of output, that is, its labor intensiveness. The annual accountability reports of kolkhozes and sovkhozes now contain figures

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[*] V.V. Novozhilov. "Problems of Measuring Costs and Results in Optimal Planning" Moscow. "Nauka", 1972, p 19.

on labor intensiveness in the production of agricultural output, and from these figures analyses are made of the level of labor productivity reached. Here, the lack of direct indicators often leads to erroneous analytical results, and this affects, in particular, the figures in comparative analyses. For example, even though in 1980 production labor intensiveness (E_1) for vegetables at sovkhozes in the Ukrainian SSR was 4.6 man-hours per quintal, which is 42.5 percent lower than the average indicator for kolkhozes in the republic (E_2 = 8 man-hours per quintal), this does not mean that labor productivity at the sovkhozes was 42.5 percent higher. Comparison of the levels of labor productivity (rather than their inverse magnitudes) shows that at the sovkhozes it was in fact higher, but by 73.9 percent rather than 42.5 percent:

$$\left(\frac{1}{4.6} - \frac{1}{8}\right) : \frac{1}{8} \cdot 100 = 73.9\%.$$

Of course, this result can also be obtained using another method. Since

$$\Pi = \frac{1}{E}, \qquad \text{then} \qquad \frac{\Pi_1}{\Pi_2} = \frac{1}{E_1} : \frac{1}{E_2} = \frac{E_2}{E_1}.$$

Hence $\qquad \dfrac{\Pi_1 - \Pi_2}{\Pi_2} = \dfrac{E_2 - E_1}{E_1}$. $\qquad$ (1)

By placing the initial figures on the right half of equation (1) we get:

$$\frac{8 - 4.6}{4.6} \cdot 100 = 73.9\%.$$

that is, in vegetable growing at sovkhozes, labor productivity was not greater by the amount that labor intensiveness was lower in vegetable growing production $\left(\dfrac{E_2 - E_1}{E_2}\right)$. but by the amount that the labor costs to produce 1 quintal

of vegetables exceeded the corresponding indicator for the sovkhozes $\left(\dfrac{E_2 - E_1}{E_1}\right)$.

Distortions are especially great in analysis of the dynamics of labor productivity from figures on production labor intensiveness. And this is obvious, since labor productivity and labor intensiveness for output are mutually inverse magnitudes. And the indicators for the dynamics of direct and inverse magnitudes never match.

Growth rates and increase rates are very important analytical indicators for a number of dynamics. The following dependence exists between labor productivity growth rates (A_n) , production labor intensiveness (A_e) and their growth rates (B and B_e respectively), expressed as percentages:

$$A_n = \frac{10000}{A_e} = \frac{10000}{100 + B_e} = -\frac{100 B_n}{B_e}; \quad (2)$$

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$$A_e = \frac{10000}{A_\Pi} = \frac{10000}{100 + B_\Pi} = -\frac{100B_e}{B_\Pi} : \quad (3)$$

$$B_\Pi = -\frac{100B_e}{100 + B_e} = -\frac{100B_e}{A_e} = -\frac{A_\Pi B_e}{100} : \quad (4)$$

$$B_e = -\frac{100B_\Pi}{100 + B_\Pi} = -\frac{100B_\Pi}{A_\Pi} = -\frac{A_e B_\Pi}{100}. \quad (5)$$

If, for example, labor intensiveness in the production of sugar beet has dropped 20 percent compared with a previous year ($A_e = 80$; $B_e = -20$), then growth rate (A_Π) and increase rate (B_Π) for labor productivity calculated from any of the formulas shown, will be 125 and 25 percent respectively. Hence, the levels in indicators for the dynamics of labor intensiveness in production and labor productivity are quite different. However, sometimes a certain percentage of any drop in the former indicator is erroneously interpreted as a percentage of increase in the latter. Accordingly, when analyzing labor productivity it is essential to measure to amount of output produced per unit of work time.

The natural method for determining labor productivity is the simplest and most widespread. Its average actual level in production of the basic kinds of agricultural produce at kolkhozes in the Ukrainian SSR as calculated by this method is shown in table 1.

Table 1. Production of Basic Kinds of Produce per Man-Hour of Direct Labor Expenditure at Kolkhozes in the Ukrainian SSR (1971-1980)*

(kilograms)

Kind of Produce	Year 1971-1975	1976-1980	1976-1980 as % of 1971-75	average annual growth rate, %
Grain (excluding corn)	58.8	76.9	130.8	5.5
Sugar beet (commercial)	66.7	90.9	136.3	6.4
Sunflower	45.4	50.0	110.1	2.0
Potatoes	26.3	29.4	111.8	2.3
Vegetables	8.8	12.7	144.3	7.6
Weight gain in cattle	1.36	1.66	122.1	4.1
Weight gain in hogs	1.96	2.27	115.8	3.0
Milk	8.40	9.71	115.6	2.9
Wool	0.30	0.32	106.7	1.3

*Calculations done using figures from the statistical yearbooks "National Economy of the Ukrainian SSR 1975", Kiev; "Tekhnika" 1976, p 276; "National Economy of the Ukrainian SSR 1980", Kiev; and "Tekhnika" 1981, p 192.

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According to the figures shown in this table, expressed as an average for the 10th Five-Year Plan (compared with the 9th Five-Year Plan), production of the basic kinds of agricultural produce at the kolkhozes of our republic increased as calculated per 1 man-hour of direct live labor expenditure. And the highest average annual labor productivity growth rates were achieved in vegetable growing (7.6 percent), sugar beet growing (6.4 percent) and grain production (5.5 percent). Rates were much lower in cattle farming and hog raising. In potato growing and in sunflower and wool production labor productivity improved only slowly: here the average annual growth rates were within the range 1.3-2.3 percent.

The natural method for measuring labor productivity, which is used extensively in practice, has a number of individual defects. Thus, in this method no consideration is given to the quality of agricultural output. Another shortcoming lies in the incomparability and incommensurability of indicators obtained for different kinds of output. The defects also include the fact that determination of productivity is done here only taking direct labor expenditure into account. But since indirect expenditures now make up a considerable proportion, and this will increase in the future, it is undoubtedly necessary to calculate and analyze productivity calculuated from total (direct and indirect) expenditures of live labor along with labor productivity associated with the fulfillment of technological processes in agricultural production.

Table 2 shows mean productivity calculated according to direct and total expenditures of live labor at kolkhozes in Globinskiy rayon, Poltava Oblast during the years of the 10th Five-Year Plan in producing the basic kinds of output.

Table 2. Labor Productivity at Kolkhozes in Globinskiy Rayon, Poltava Oblast (figures for 1976-1980)

(kilograms per man-hour)

Kind of Produce	Productivity calculated from expenditure of live labor		Productivity from total labor expenditure as a percentage of productivity from direct labor expenditure
	Direct	Total	
Grain (excluding corn)	92.9	55.9	60.2
Sugar beet (commercial)	129.5	74.2	57.3
Sunflower	68.5	43.2	63.1
Potatoes	20.6	13.8	67.0
Vegetables	10.4	7.2	69.2
Weight gain in cattle	1.95	1.33	68.2
Weight gain in hogs	2.58	1.71	66.3
Milk	9.75	6.55	67.2
Wool	0.31	0.19	61.3

* * * * *

It can be seen from table 2 that productivity calculated from total expenditures of labor is 30.8 to 42.7 percent lower than the level calculated from direct expenditures. This large gap between the two indicators testifies to the advisability of analyzing labor productivity from a calculation both of direct and total expenditures.

As a result of the incomparability of natural indicators for labor productivity achieved in different sectors, when studying and analyzing its dynamics, cost indicators are used. Here, the method used most extensively is that of gross output calculated per average man-hour or per average annual worker engaged in agriculture. These indicators have been included in the actual accountability forms, and many researchers think that they characterize actual labor productivity more fully and more accurately.

In 1980, some R2,968 of gross output were obtained per average annual kolkhoz farmer, which is 16.6 percent more than in 1975. Across the years of the 10th Five-Year Plan the level of this indicator varied between R2,986 and R3,265, giving an average of R3,086.*

In recent years, in line with the introduction of the achievements of scientific and technical progress in agriculture and under the conditions of the development of interfarm cooperation and agro-industrial integration and a switch in production of the basic kinds of agricultural produce onto an industrial basis, material input has increased significantly and labor intensiveness has fallen. As this law-governed pattern progresses, gross output calculated per unit of time spent or per average annual worker will reflect increasingly poorly the actual productivity of live labor.

Since pricing is subordinate to the complex tasks of economic policy, output that is produced on farms has varying degrees of profitability. This results in error in the measurement of labor productivity when cost indicators are used.

When analyzing the level of labor productivity calculated from gross output (in comparable prices) it should also be remembered that methodology for determination is not perfect. Since calculation of the volume of gross output is done using the method for gross turnover, fodder, seeds and certain other kinds of output may be counted more than once; and quality is not taken into consideration.

One shortcoming common to both natural and cost indicators for labor productivity is that they are calculated according to expenditures of live labor. On the one hand this approach is correct since it is only live labor that is productive. On the other hand, however, output is the result of both live labor and past (embodied) labor, and it should be compared with total labor expenditures. In this connection, the All-Union Scientific Research Institute of Agricultural Economics and the Ukrainian Scientific Research Institute of Economics and Organization of Agriculture imeni A.G. Shlikhter are working on a methodology that can be applied in a practical way to calculate the complete labor intensiveness of production.

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* Calculated from figures in the statistical yearbook "National Economy of the Ukrainian SSR 1980," p 182.

Of the other cost indicators for measuring labor productivity, mention should
be made of gross income calculated per man-day or per average annual worker.
Compared with the one considered above, this indicator has obvious advantages
in terms of methodology: in this case, using the value of output produced
a calculation is made of transferred value which includes embodied labor,
and this difference alone (that is, net output) is compared with the amount
of live labor expended. That is, the calculation of productivity (Π) in
live labor (T) is done using a formula whose numerator and denominator are
comparable:

$$\Pi = \frac{v+m'}{T} = \frac{v+m'}{T_v + T_m} . \qquad (6)$$

where $v + m'$ is the newly created value (excluding that part of the additional
output that goes into the state centralized fund via the price mechanism);
and T_v and T_m are necessary and additional labor respectively.

Whereas gross output calculated per unit of live labor expended fails to take
into account savings in material resources, in gross income efficiency in
the utilization of both live and embodied labor is reflected.

In 1980 in the Ukrainian SSR, R1,355 of gross income were obtained as calculated
per average annual kolkhoz farmer.* Since the size of gross income is determined
according to prices for the corresponding years, analysis of the dynamics
of labor productivity calculated from this indicator causes great difficulty.
Comparison of labor productivity not only by years but even for individual
kolkhozes, sovkhozes, rayons and so forth should be considered to some extent
limited. In order to make the results of comparative analysis for labor
efficiency objective it is necessary to take into account each farm, and in
particular the quality of the soil at its disposal, the production structure,
and so forth.

As already mentioned, the numerator and denominator in formula (6) are
comparable. But even comparability is still incomplete because the numerator
contains not all the additional product (m) but only part of it (m').

Since labor productivity is more correctly measured by gross income calculated
per unit of expenditure of live labor, rather than using other cost indicators,
it is necessary to improve the methodology for calculating it at kolkhozes
and to introduce an appropriate form for the annual accountability reports
of sovkhozes. In the meanwhile, gross income determined at the kolkhozes
is understated by the amount of net income from substandard agricultural
output and turnover tax, which is realized in the prices for industrial output.

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* Calculated from figures in the statistical yearbook "National Economy
  of the Ukrainian SSR 1980," p 192.

Thus, the most objectively real labor productivity is characterized by natural indicators: their level does not depend on cost factors since calculations are done from the actual volume of output produced. It is not especially complicated to overcome the incommensurability of these indicators; all that is required is to establish a normativ (or average for each period) labor productivity ($\overline{\pi}_j'$) for each kind of output. The general level of labor productivity (π_c') in the form of an index is then calculated from the formula:

$$\Pi_{\iota} = \frac{100 \sum \frac{O_j}{\overline{\pi}_j}}{\sum \frac{O_j}{\pi_j}} = \frac{100 \sum \overline{E}_j \, O_j}{\sum E_j \, O_j} = \frac{100 \sum \overline{T}_j}{\sum T_j}. \qquad (7)$$

where O_j is the volume of output of kind j; π_j the production of j-kind output in one man-hour, and $\overline{E}_j$ and E_j are the normativ (or mean) and actual labor intensiveness respectively in the production of output j, and $\overline{T}_j$ and T_j are respectively the normativ and actual labor expenditures in the production of j kinds of output.

For example, during the 10th Five-Year Plan, labor intensiveness to produce 1 quintal of milk in the economy was 10 man-hours, while the figure for 1 quintal of weight gain in cattle was 60 man-hours and in hogs, 50 man-hours. In 1981 totals of 30,000 quintals of milks, 3,500 of weight gain in cattle and 2,000 quintals of weight gain in hogs were obtained. Here, total labor expenditures amounted to 500,000 man-hours. If we take the labor expenditures needed in 1976-1980 to produce 1 quintal of livestock farming produce expressed in normativs, then, according to the figures for 1981, the index for labor productivity will equal

$$\frac{100(10 \cdot 30000 + 60 \cdot 3500 + 50 \cdot 2000)}{500000} = 122\%.$$

This method has been used to calculate average labor productivity for the 10th Five-Year Plan at the kolkhozes in Poltava Oblast in the production of the basic kinds of agricultural output. Here, the normativ used was mean labor intensiveness for the period 1971-1975. As a result, the index of labor productivity was 123.7 percent.

In order to account for output quality in formula (7), its volume (O_j) should include a correcting coefficient (K_j).

For example, if basic sugar content in beet has been established at, for example, 15 percent, and the sugar content in the roots grown by three brigades at a kolkhoz was equal to 16, 14, and 15.5 percent respectively, then the correcting coefficient (K_j) for the volumes of production for this kind of output by brigades would be:

$K_1 = 16:15 = 1.067; \; K_2 = 14:15 = 0.933; \; K_3 = 15.5:15 = 1.033.$

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The method we have examined for determining the general level of labor productivity is promising. It acquires special significance with the practical introduction of methodology for calculating expenditures of live and embodied labor, since in this case all output obtained can be compared with complete labor expenditures for production. K. Marx wrote that "work time, even when barter value is eliminated, always remains a creative substance in wealth and a measure of the expenditure required to produce it." * Consequently, labor is the most accurate measure of production expenditures and it is therefore correct to amalgamate different kinds of output most correctly according to their labor intensiveness.

The prices set in 1973 that are still used for this purpose do not reflect direct labor expenditures with sufficient completeness. One proof of this, for example, is the lack of proportional dependence between the labor intensiveness of individual kinds of output and their prices. Thus, during the period 1976-1980 the average direct labor expenditure to produce 1 quintal of milk at kolkhozes in the Ukrainian SSR was 3.029 times higher than that to produce 1 quintal of potatoes. But the comparable price for milk is only 1.923 times higher than for potatoes. It might be thought that prices for output would be closely connected with their complete labor intensiveness, but the results from calculations of basic kinds of output do not confirm this. Look at the relationship between complete labor expenditures to produce the above kinds of output. According to figures cited by professor A.A. Bugutskiy, in 1978 total labor expenditures (live and embodied) to produce 1 quintal of milk and 1 quintal of potatoes at kolkhozes in the Ukrainian SSR were 25.2 and 8.8 man-hours respectively,** that is, the complete labor intensiveness for milk was 2.863 times greater, which exceeds the relationship between the prices for these kinds of output by a factor of 1.5. This all indicates that it is advisable to determine the total volume of production for different kinds of output by calculating labor productivity expressed in units of work time (norm-hours), which would insure than realistic results were obtained.

The methods used in practice to measure labor productivity do not fully meet the great demands that the CPSU and Soviet government are setting for agriculture at the present stage in the development of our country's economy. Improving these methods is one of the most urgent problems for economic theory. Its successful resolution will promote further growth in agricultural labor productivity, increase output and lower prime costs, and also enable more efficient use of land and the production facilities and manpower available to kolkhozes and sovkhozes.

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* K. Marx and F. Engels. Works Vol 26 part 3, p 265

** A.A. Bugutskiy. "Improving Labor Efficiency in Agriculture" Kiev, "Urozhay", 1980, pp 78-80

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EDUCATION

METHODOLOGY FOR DETERMINING TEACHER DEMAND EXPLAINED

[Article by B. Andriyevskiy, candidate of pedagogical sciences: "Methods of Determining the Need for Pedagogical Personnel in School Education"]

[Text] The planning of the need for pedagogical personnel is one of the complicated sectors in the administration of school education. On the one hand, the planometric computations are complicated by the lack of any criteria for the optimal development of the general educational school and of any sufficiently substantiated quotas and norms that form the basis for determining the need for pedagogical personnel. On the other hand, the disproportion that exists between the need for qualified personnel and the opportunity to satisfy it is caused by the imperfection of the approaches that exist in theory and practice toward the planning of the training of pedagogical personnel for general educational schools. At the same time the specifics of school education are so unusual that the direct borrowing of methods of planometric computations from other branches of the national economy does not produce the desired result. For example, at the present time one of the widespread methods of determining the need for specialists is generally considered to be the method of saturating the branches of the national economy with them. The essence of that method lies in the following: on the basis of the data concerning the supposed size of the population that will be employed in the various branches of the national economy and the information concerning the percentage of the specialists per thousand of the overall number of workers in the branch, as well as the information concerning the correlation between people with higher and secondary education, one establishes the absolute need for professionally qualified specialists for the long-time view (see: Zhamin, V. A., "Ekonomika obrazovaniya. (Voprosy teorii i praktiki)" [The Economics of Education: Questions of Theory and Practice], Moscow, "Prosveshcheniye," 1969, p 147).

It is easy to note that the saturation criteria that are employed in the economy and the other branches of the production sphere are not acceptable in the system of school education. First, under conditions of the carrying out of universal secondary education for young people, the existence of teachers who do not have higher special education is at least undesirable. Of course, at the given stage in the social development of our society, one has not yet felt a sharp need to raise the educational level of the teachers in the primary grades, especially since the percentage of teachers in the first

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three grades with higher education has been increasing from year to year. Even if the rate of increase in this category of specialists remains unchanged, by 1990 the overwhelming majority of teachers in the primary classes in the republic's schools will have higher pedagogical education. In this regard there is, in principle, no need to establish the proportions of teachers with higher and secondary special education.

Secondly, the indicator of the share of people with pedagogical training per thousand of workers in the area of school education does not completely characterize the degree to which the branch is provided with specialists, since the initial factor for the computations is the size of the student contingents. The opinion exists that a more precise idea concerning the saturation with teachers is provided by the data concerning the number of pedagogical workers per 10,000 children of school age.

According to another point of view, the saturation of the branch with teacher personnel must be based on the indicator of the ratio of the number of students in the general educational schools to one teacher. On the basis of a retrospective analysis of the indicator of the ratio of the number of teachers per 10,000 children of school age or the number of school children per teacher, and according to the data pertaining to a demographic forecast of the school contingents, one determines the need for personnel for the long-term period.

At first glance it may seem that these approaches to the computation of the absolute need for pedagogical personnel are justified. However, the level of saturation of the school system with qualified specialists is still far from the ideal. In 1982, for example, in the general educational schools in the UkSSR, 97.5 percent of the teachers of specific subjects (other than the disciplines in the esthetic cycle, and physical and labor indoctrination) had higher education; 2.4 percent had incomplete higher education; and 0.1 percent had secondary special education. For the group made up of grades 1 to 3, the share was, respectively, 45.1, 3.9, and 51 percent. The educational qualification of the teachers in the esthetic cycle, physical culture, and labor indoctrination at the present time, unfortunately, does not completely satisfy the needs of the modern school. For example, for drawing, music, and singing, the share of teachers in the republic as of the beginning of 1982 with higher education was only 58.9 percent; those with incomplete higher education, 4.7 percent; while 33.4 percent had special secondary education and 3 percent had general secondary education.

As we can see, a considerable number of teachers do not have the necessary pedagogical education. From this it follows that the forecasting of the number of teachers that was established with the aid of the correlation coefficients will not correspond to the real demands of the practical situation, since it will not reflect the additional need for replacing the specialists who lack the appropriate education.

In addition, there are no sufficient grounds for feeling that the number of working teachers (one of the chief components when determining the correlation coefficient) has yet been optimally guaranteed and that it will be guaranteed for the system of school education.

The results of our research have shown that the deviations from the absolute needs for teachers that were computed with the aid of the methods that were mentioned -- that is the deviations from their values (actual number of teachers) throughout the base-control period (1972-1982) -- constituted from 0.07 to 8 percent. The degree of divergence increased with an increase in the forecast horizon.

The checking of the method of forecasting the quantitative makeup of the pedagogical personnel, the basis of which is the size of the ratio of the number of teachers per class (in the practice of planning, there actually exists such an approach), also yielded considerable divergences. For example, the annual coefficient of the ratio of teachers per class in UkSSR from 1970 through 1980 was equal to 1.4. Consequently, the annual size of the personnel composition of the teachers throughout that period ought to be approximately stable. However, in 1972 the composition of the teachers, as compared to 1970, increased by 3,500, and in 1974 the reverse situation occurred -- there was a reduction of more than 6000 persons and by 1982 the difference had already reached 33,000 persons.

Thus, the use of the coefficient of the ratio of the number of students to the individual teacher, or the teachers to the class, as the initial norm that regulates the numerical composition of the pedagogical personnel, seems to us to be incorrect.

In order to characterize the level to which the school education system is saturated with specialists it is necessary to have indicators that reflect its specific peculiarities and that enable one, with a sufficient degree of reliability, to carry out the computations of the long-range need for pedagogical personnel. The items that must be considered to be such criteria are the number of classes, the hours allocated by the curricula for the teaching of the instructional disciplines, the norms that pertain to the teaching load, and the coefficients for movement of pedagogical personnel.

In the practice of planning the pedagogical personnel, the indicator of the teaching load is established on the basis of its dynamics during the previous years. However, the load norms evolve from the requirements to guarantee the high level of the instructional and indoctrinational activities of the teacher, as well as the creation of the conditions for his ideological-theoretical and professional growth. Therefore, the deviations from the legislative workload norms have a definite effect upon the organization and conducting of the instructional and indoctrinational process. At the same time the planned and actual indicators for the average annual workload of the teachers, as a rule, exceed 18 hours a week. For example, during the 10th Five-Year Plan the annual divergences between the norm and the actual average hourly workload constituted: for a mathematics teacher, 2.8 hours; physics, 2.4; geography, 2.9; Russian language and literature, 3.1; etc. There would seem to be no special reasons for concern with regard to these relatively insignificant devia-tions. However, a random analysis of the individual figures in a cross-section of the schools indicated that there have been instances when the teachers' workload is as high as 36, or sometimes even more, hours a week.

The factor that can be considered the most substantial reason for such phenomena is the shortage of qualified teachers under the conditions of remote rural

regions. As a result of the sowing-out process in pedagogical educational institutions, the failure of some of the graduates to show up at their assigned place of work, and the turnover rate among the pedagogical personnel, one sees the creation of a definite shortage of them, which causes an overloading of a certain number of specialists. Therefore it is necessary first of all to take effective steps to improve the professional selection and training of the pedagogical personnel and to assign young specialists to rural general educational schools.

From everything that has been said it follows that the computations of the long-range need for teachers should be based not upon the indicator of the average pedagogical workload that has developed, but, rather, upon its established norms. The basic indicator of the optimal saturation of school education (S) can be the absolute need for personnel. Deducting from the absolute need (A), which is assumed to be 100 percent, the presumed quota of loss of teachers (L) and adding the share of the expected replenishment of the personnel complement during the planned year by drawing upon the graduates from pedagogical educational institutions and the influx of specialists from the other union republics and branches of the national economy (I), we determine the level of the actual saturation of the system:

$$S = A - L + I. \tag{1}$$

Let us assume that the loss as of the end of the base year was equal to 5 percent, and the replenishment was 3.5 percent. Substituting the numerical values into formula (1), we obtain:

$$S = 100\% - 5\% + 3.5\% = 98.5\%.$$

As we can see, the saturation of the branch in the particular year will reach 98.5 percent. Hence the additional need (100% - 98.5%) is equal to 1.5 percent of the total number of teachers.

The absolute need for teachers of primary classes corresponds to the number of primary classes. The computation of the absolute need for teachers of specific subjects is carried out by means of the division of the overall fund of instructional hours (number of classes, multiplied by the time allocated by the curricula for the instruction of the disciplines) by the indicator of the established weekly pedagogical workload.

Under the conditions of multiset schools, where each teacher is guaranteed the necessary teaching load, this approach is sufficiently effective. But in schools with a small student population, it is not a justified one in view of the fact that the number of salary rates that is thus computed will not correspond to the actual need for teachers.

In the practice of planning, the computations are carried out for the urban and rural localities separately. As for the guaranteeing of pedagogical personnel for the schools, the differences lie only in the fact that, by virtue of the incompleteness of their sets of students, many of the rural schools fail to guarantee the necessary workload for most of the teachers of specific subjects. Unfortunately, the share of the schools with a small population of

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schoolchildren and an insignificant completeness of the set of classes is not only not decreasing, but, conversely, has a tendency toward increase. This can be observed with particular clarity in the rural rayons of the republic. For example, in 1978 the share of the eight-year secondary schools with fewer than 100 students, as compared with 1975, increased by 13.9 percent, and those in which the student population was 101-280, conversely, there was a decrease by 9.6 percent. Taking into consideration the fact that the share of the schools with an incomplete set of classes is rather considerable and it is possible that that share may increase in the long run, the providing of those schools with the necessary specialists continues to be one of the vitally important problems. In this regard a positive role could be played by the expansion of the practice of training teachers in several related disciplines. The training of specialists with a broad range of specialization will make it possible for each teacher to have a workload in his subject in the rural locality and will contribute to a stabilization of the permanent-cadre composition of the teachers, and that will undoubtedly raise the level of the instructional and indoctrinational work being carried out in the rural schools.

Thus, the specifics of the population settlement and the demographic situation that has developed give one the justification for feeling that the computations of the needs for pedagogical personnel should preferably be carried out not on a locality basis, but depending upon the degree to which the schools are filled with students. For schools with a set of 20 or more classes, it would be desirable to introduce the training of "pure" teachers; and for schools with fewer than 20 classes, specialists with a broad area of specialization.

The simplest method of computing the need for teachers for the schools with an incomplete set of classes is the distribution of the need by subjects into the need for teachers with combinations of subjects. All the existing combinations and their elements (instructional subjects) are assumed to be of equal importance. By designating one of the elements (for example, mathematics) with the letter m and another (physics) with the letter p, let us compute the absolute need A for teachers in the category mp with the aid of the following formula:

$$A_{mp} = \frac{N(H_m + H_p) - id}{N} , \qquad (2)$$

where H_m represents the hours allocated by the curricula for the instruction of mathematics; H_p, the hours allocated by the curricula for the instruction of physics; N, the number of classes in schools with an incomplete set of classes; i, the average workload of the director and his deputies in instructional and indoctrinational work; and d, the number of the directors and their deputies for instructional and indoctrinational work in schools with an incomplete set of classes.

In order to compute the absolute need for educators, we take as the initial figure the number of indoctrinational groups and the norms for permanent staff.

The number of groups is determined by dividing the number of students in boarding schools, boarding houses attached to schools, groups, and schools with a prolonged

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school day by the average rate to which the group is filled. Multiplying the obtained number of groups by the corresponding norms for permanent staff, we find the absolute need for educators (E):

$$E = \left(\frac{S_i}{F} \cdot G_b\right) + \left(\frac{S_h}{F} \cdot G_h\right) + \left(\frac{S_p}{F} \cdot G_p\right),$$ (3)

where S_b represents the number of students in boarding schools; S_h, the number of students in boarding houses attached to schools; S_p, the number of students in schools and groups with a prolonged day; F, the normative rate of filling of the group; G_b, the number of educators per group of students in boarding schools, according to the authorized staff; G_h, the number of educators per group of students in boarding houses attached to schools, according to the authorized staff; and G_p, the number of educators per group of students in schools and groups with a prolonged day, according to the authorized staff.

According to the authorized staff in the secondary and eight-year schools with a fullness rate of up to 30 classes, provision has been made for the billet of senior Pioneer leader. In schools with 30 or more classes, two billets are introduced. Therefore, in order to determine the absolute need for senior Pioneer leaders, it is necessary first of all to establish the coefficients for schools with the corresponding number of classes. The initial values are expressed by the ratio of the number of schools with the corresponding number of classes to their total number. These ratios have a definite stability in time, and the efore the computed coefficients can be used when carrying out forecasting and planning elaborations for the near and medium future. In order to find the number of schools in the absolute expression, all one has to do is multiply their coefficients by the total number of secondary and eight-year schools during the planning year. Having thus ascertained the number of schools with a fullness rate of up to 30, and 30 or more classes, we find the absolute need for senior Pioneer leaders: we multiply the obtained values by the norms for the number of senior Pioneer leaders in accordance with the authorized staff.

In order to predict the level to which the school-education system will be saturated with pedagogical personnel, as I have already emphasized, in addition to the absolute need it is necessary to establish the indicators of the loss of specialists from the system and the supplementing of the system with them during the prospected year. Taking into consideration the fact that we are considering the modeling of these phenomena in the future, one can determine for them only the theoretical values. The quantitative characteristics of those phenomena are expressed by the ratios:

$$L_i = \frac{L_b}{P_b} \cdot 100\% \quad \text{and} \quad G_i = \frac{G_b}{P_b} \cdot 100\%,$$ (4)

where L_i represents the percentage indicator of the assumed loss of pedagogical personnel during the forecast year; L_b, the number of pedagogical personnel

who have left during the base period; P_b, the number of pedagogical personnel during the base period; G_i, the percentage indicator of the assumed supplementing [gain] in the personnel composition in the forecast year; G_b, the number of of pedagogical personnel who supplemented the personnel composition during the base period.

By substituting the absolute or relative values of the computed criteria into formula (1), we establish the level to which the school-education system is saturated with pedagogical personnel.

The results of our study indicated that another rather effective method when making planometric computations of the additional need for teachers of specific subjects is the method which has as its basis the indicator of the difference between the norm and the actual teaching load. The computation mechanism lies in the following. The difference between the norm and the actual load during the base period (D_b) is multiplied by the number of available teachers of specific subjects in the forecast year (P_i), and then the product is divided by the hour-by-hour weekly workload (W):

$$N = \frac{D_b \cdot P_i}{W} . \tag{5}$$

The obtained value expresses the additional need for teacher personnel.

The coincidence of the workload criteria being compared attests to the fact that the saturation of the system with personnel corresponds to the norm. A difference with a minus sign attests to an excess of specialists, and, conversely, with a plus sign, a shortage of them. It is necessary at such time to take into consideration the possible changes in the size of the pedagogical load in the forecast period, and to reduce it, from the point of view of the economic and psychological-pedagogical considerations, to the optimal limits. Already the specifics of the instructional and indoctrinational process in full-day experimental schools have required the re-examination of the teaching load as one of the versions of the more efficient use of qualified pedagogical personnel. The basic pedagogical load of the teacher in such schools has been brought to 12-14 hours a week. Therefore, in order to forecast the need for teacher personnel it is extremely important to establish the most probable amounts of time required for the proposed changes in the established workload norms and the extent of that workload. In our instance the weekly teaching load remains stable and corresponds to the accepted norm.

Let us assume that the difference between the norm and the workload that has developed has constituted two hours, and the number of the teachers as of the beginning of the planning year (after the loss and gain of the personnel complement) is 360,000 persons. Substituting the absolute values into formula (5), we find the additional need for teachers:

$$N = \frac{2 \times 360,000}{18} = 40,000 \text{ persons.}$$

The testing of the proposed approaches to the computation of the needs for pedagogical personnel was carried out by using the materials for a number of

oblasts in Ukrainian SSR. On the basis of the initial data for the base-control period (1972-1976), a computation was made of the theoretical annual absolute and additional needs for teachers in various qualification categories for the forecast-control period (1977-1982). Comparative analysis showed the maximum deviations in the computed values, as compared with the actual values, to be as much as 1.76 percent, which figure falls within the limits of the admissible figures when forecasting totalities of this sort.

The present-day conditions are making increasingly complicated demands on the administration and planning of school education. The making of administrative decisions must be tied in with a number of problems of a socioeconomic, demographic, and pedagogical nature. In this regard a factor that takes on special importance is the availability of many different alternatives for the planning elaborations, thus making it possible to select the optimal paths for the further development of the school-education system.

The introduction of the proposed approaches into the practice of planning by no means negates the "traditional" methods of computing the need for pedagogical personnel. On the contrary, when one makes the skillful combination of all the existing methods, the maximum benefit from their application is possible.

EDUCATION

USE OF STUDENTS TO AUGMENT LABOR FORCE DISCUSSED

[Article by G. Zaytsev, B. Uvarov, candidates of economic sciences, Leningrad: "The Use Of Student Labor As An Important Source for Augmenting Labor Resources"]

[Text] The task of intensifying socialist economic development that was assigned by the CPSU is being carried out under tense labor resource conditions. This is prompting the use of all resources at hand, including student labor. Under current conditions this is a very significant source for expanding the field of social labor in both material production and the non-production sphere. The current state and the near-term future of the country's labor resources demand that growing attention be paid to this source and even more so because its use has important significance in deciding ideological and educational tasks for a developed socialist economy. The June (1983) CPSU Central Committee Plenum turned its attention to the fact that "a good way of indoctrinating is combining studies with industrial labor. This can be physical or mental work, but it must absolutely be real productive labor necessary to society."[1]

At the present time we have accumulated definite positive experience in using the labor of matriculating young people in the national economy. We have developed an organizational structure, student construction detachments (SSO), and the method for forming them, their function, financing and normative issues and have discovered possible areas for student labor use. It is important to study and improve this experience based on both the original direction of our economy's development and the specifics of using this worker contingent.

We must note that student labor resources are still far from being totally used. Students now work (primarily as members of SSO's) only during their summer break or parts of it. Moreover, research conducted shows that 35-45 percent of full-time students are ready to work a partial work-day (partial work-week) throughout the year. Our own and foreign experience supports the fact that such a reserve can be used without loss of future

1. "Material'y Plenuma Tsentral'nogo Komiteta KPSS 14-15 iyunya 1983" [Material from CPSU Central Committee Plenum, 14-15 June 1983] Moscow 1983, p 18.

specialist training. While we are not talking about mass training of specialists on the whole who have not quit working, we have definite experience in combining daily education with work in the national economy. Unfortunately, for the present we have not yet adopted the measures necessary to rationally organizing this combination. Polling has shown that more than 60 percent of the students combining education with work in the national economy work more than 31 hours per week. This is excessive and negatively effects studies. Also the desire of many enterprises to use students in the worst jobs and to give them schedules based on those of permanent workers does not facilitate successfully combining studies and work.

Student labor participation in developing our national economy is an important direction for attracting labor resources. This requires special, carefully thought out approaches and only they can give valuable results. This includes both work schedule and work location selection. Where possible, it is important to send students to work where they will work upon completing their studies. The development of such an approach requires coordinated efforts and carefully prepared experiments can play an important part in this.

In 1979 the All-Union Komsomol Central Committee decided to conduct an experiment in hopes of improving the fall-winter activity of Leningrad's matriculating youth. This included the jobs of developing an organization for student work activity, studying its impact on student socio-political activity, progress and health, preparing legal drafts aimed at increasing the effectiveness of using matriculating student labor during the fall-winter period and developing procedures for predicting and planning how to attract students to non-study work activity. A special group under the auspices of the Leningrad joint student detachment headquarters was created to control the experiment and student job-placement social buros (OBTS) under the auspices of the Komsomol committees were organized in 34 senior and 19 secondary special educational institutions in Leningrad. This special group and the OBTS's had the missions of not only selecting jobs for people desiring to work individually or as part of year-round student detachment (KSO), establishing contacts with organizations wanting to use student labor and participating in work reception proecedures, but also of controlling the work of the individual pluralists and KSO members and analyzing the results of their work and study activity.

The OBTS's placed 9154 people in jobs in the first semester of 1980/81 and 12,679 in the second. In the 1981/82 school year more than 20,000 students worked either individually or in the 178 KSO's. Just the significant growth in the number of students attracted to socially useful work in and of itself convincingly shows the large possibilities of this source of labor augmentation. On the whole the KSO is a successful form for mobilizing this source. These detachments are a voluntary collective with student leadership, a common work front which is defined by its economic contract with the organization accepting it. The KSO allows the job-placement procedure to be minimized, jobs in the chosen speciality to be found and a favorable work schedule to be established. It also effectively influences increased organization and pay and introduces student pluralism within the planned framework. Each job in such a detachment can be given to two or three members, thus giving them the possibility of working, on the average, two to three times per week.

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Sociological research conducted into the activity of the experiment's participants (in six Leningrad VUZes) allowed us to view student-pluralists' social characteristics. Males made up 68.5 percent of the student-pluralists and 65.9 percent of those polled were from 19 to 22 years of age.

Just as it was before the experiment, primary motivation for the majority of students (81.3 percent according to research data) to work during non-study time was to earn money.

Research showed that despite the additional load student-pluralists actively participate in educational institution social life (64.2 percent of the individually working students and 65.4 percent of the KSO members) and they have permanent social assignments. Judging from research results, work in social production has no negative impact on the level of the young peoples' socio-political activity or on their progress and does not create an overload that adversely affects their health.

An analysis of student labor use showed that the amount of work depends on the type of work done by the pluralists. Among KSO members working basically in material production, 45.7 percent worked 5-7 hours per day and 42.8 worked 3-4 hours per day. For non-KSO workers, 26.1 percent worked 5-7 hours per day and 38.8 percent worker 3-4 hours per day. Four times as many non-KSO workers as KSO members worked 1-2 hours per day. Thus the KSO member time and organizational work schedule approximates a work-shift. It more closely corresponds to the requirements of production but is filled with problems for student study and social work.

At the present, piece-rate (25.2 percent) and time-rate (31.1 percent) are the most used pay options for student-pluralists. The larger part of those polled, 31.7 percent, preferred piece-work payment; only 14.7 percent favored time-rate payment. The piece-work payment system is very popular among students, 18.3 percent of whom responded for it, but only 1.8 percent of the student-pluralists are paid in this fashion. It is apparently necessary to get greater distribution of all forms of brigade organization and pay for student work.

The average daily wage for more than half of those polled varied from 3-6 rubles and the wages are higher for KSO members. It is important that 9 out of 10 participants in the experiment conducted were satisfied with their wages and satisfaction among KSO members reached 98.8 percent.

As research showed, 83.8 percent of those polled supported establishing a special VUZ information service covering jobs for students and only 7.2 percent thought that the city buro of job-placement and information should do this work. The Komsomol committees having such information as job vacancies led to the fact that 76 percent of the students took only a few days to find work (before the experiment it took about 20 days). At the same time the term for registering students at work is still long. Thus, for 32.1 percent of those asked, the job placement procedure took more than 4 days.

The conducted experiment allowed not only a two-fold increase in the number of students drawn into work activity, but also increased their length of work many-fold.

Since, as data showed, the basic job-selection criterion is maximizing salary, it seems that, to a large degree, industrial enterprises in those areas (food, light industry, etc) that are suffering a sharp work force shortage meet these conditions. A large number of these enterprises extended student advantages stipulated for student construction detachments (lower output norms, income-tax advantages, etc) into the fall-winter work activity.

Unfortunately KSO functions use neither educational institutions or enterprises in their planning sequence for training future industrial managers. The ties with enterprises in spheres corresponding to VUZ training are still weak and there is no "interface" between educational programs and work in production.

As a rule, publications dedicated to problems in training highly qualified specialists note the poor level of young specialists' organizational skills and production-technological training. Attempts at eliminating these "bottlenecks" by improving social-political practices are not providing the necessary results. For the long range, in our opinion, it is worth establishing a future student-work-career model which would give a student the ability to try a significant number of social-professional roles during work, work at different operations, brigades, etc. In turn, resolving this problem requires the exposure of both a number of applicants for this or that job (low, medium or high qualifications) and a definite number of fields, enter- prises, and jobs for which it is worth (both from the higher schools and enterprises and the students' point of views) using matriculating young people. It is evident that it will require a definite change in educational institution work practices (for example, giving KSO members the ability to study according to individual schedules, advantages in assignments, passing work to detachments as an industrial practice, etc). In our view, it would also be advisable to include student production work in academic places and to develop a list of positions and enterprises where they could work to acquire the knowledge necessary for specialists in that specialty.

We will note in conclusion that a legal base, a typical economic contract between the VUZ and the enterprise is very necessary for the KSO. It is also advisable to change the indicator of the total student strength accepted in an enterprise to the indicators of equivalent jobs which are done on a full workday schedule. In our opinion, with further improvement in its organization, year-round student detachment work will allow not only the attraction of a significant amount of necessary labor resources to the national economy, but will play a positive role in training valuable, highly qualified specialists.

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